SONY

DIGITAL INFORMATION RECORDER

GY-2120WD
GY-2120WS

DTF
Digital Tape Format

MAINTENANCE MANUAL
1st Edition (Revised 2)
Serial No. 10001 and Higher

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理など行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual for Digital Information Recorder GY-2120WD/2120WS.
This manual is intended for use by trained system and service engineers, and provides the information for maintenance, and the information for service such as replacement of boards.

Contents

This followings are summaries of the each section for understanding the manual.

Section 1. Service Overview
Describes information about removal of cabinet, main parts layout, instance of function of internal switches, connector input/output signals, replacement of part, the fixture and measuring equipment.

Section 2. Periodic Maintenance and Inspection
Describes periodic check and cleaning procedure.

Section 3. Replacement of Mechanical Parts
Describes replacement of the main mechanical parts.

Section 4. Mechanical Alignment
Describes adjustment procedures after the mechanical parts replacement.

Section 5. Tape Path Alignment
Describes adjustment prcedures of tape path system.

Section 6. Maintenance Mode
Describes the servo system, RF system adjustment and the maintenance mode.

Section 7. Spare Parts
Describes the spare parts,

Section 8. Block Diagram
Describes the overall block diagram and frame wiring.

Appendix A Downloading of Firmware
Describes the downloading of firmware using DTF tape.

Relative manual

Besides this maintenance manual, the following manual is available for the unit.

- **Operation Manual(Supplied with the unit)**
  This manual is necessary for application and operation of the unit.

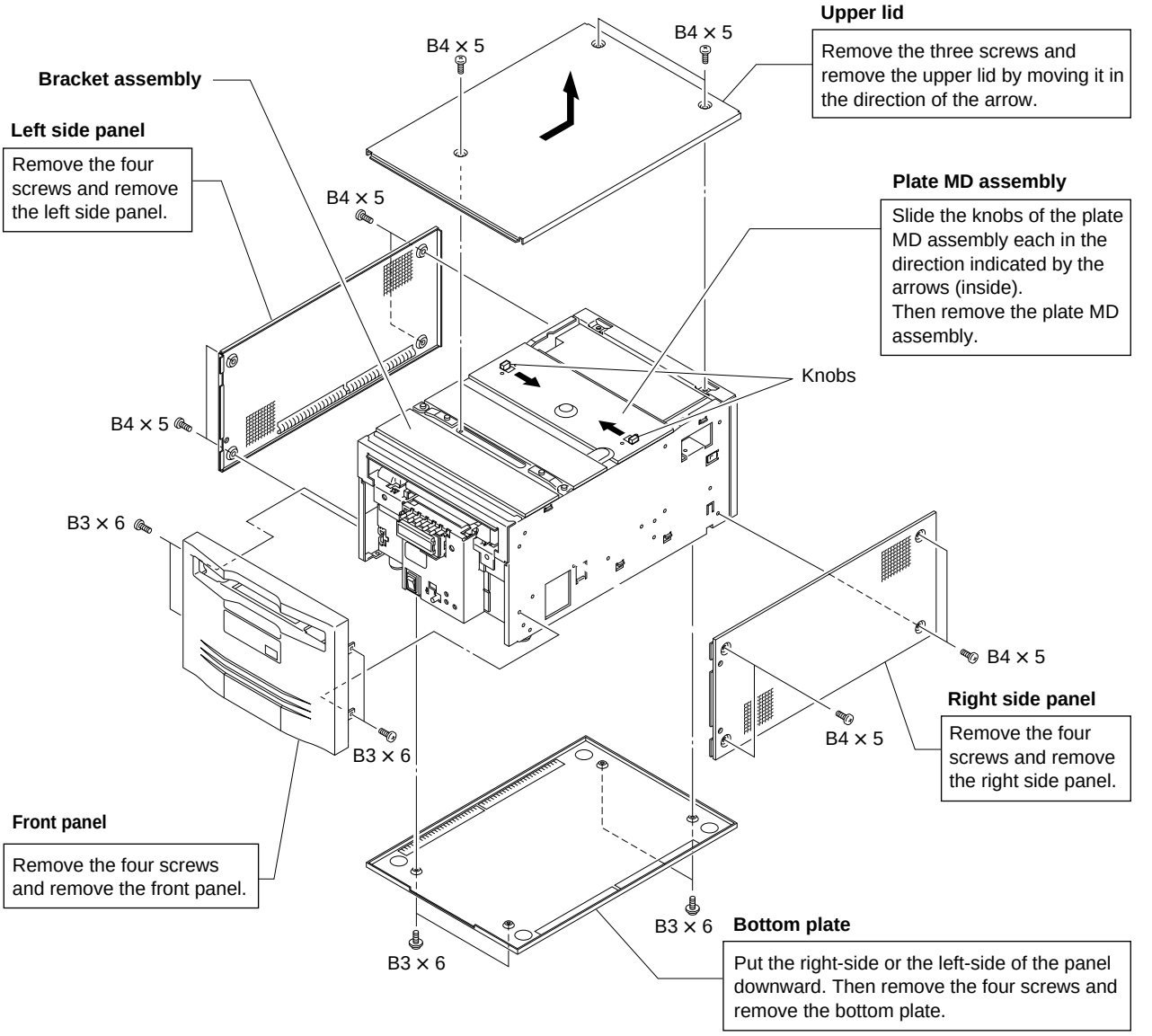
Section 1
Service Overview

1-1. Removal/Installation of Cabinet

1-1-1. Removal/Installation of Cabinet

CAUTION

Make sure that the power is turned OFF in the case of removal/installation.


Upper lid
Remove the three screws and remove the upper lid by moving it in the direction of the arrow.
B4 × 5
B4 × 5
Bracket assembly
Left side panel
Remove the four screws and remove the left side panel.
B4 × 5
Plate MD assembly
Slide the knobs of the plate MD assembly each in the direction indicated by the arrows (inside).
Then remove the plate MD assembly.
Knobs
B4 × 5
B3 × 6
B4 × 5
Right side panel
Remove the four screws and remove the right side panel.
B4 × 5
B3 × 6
Front panel
Remove the four screws and remove the front panel.
B3 × 6
B3 × 6
Bottom plate
Put the right-side or the left-side of the panel downward. Then remove the four screws and remove the bottom plate.

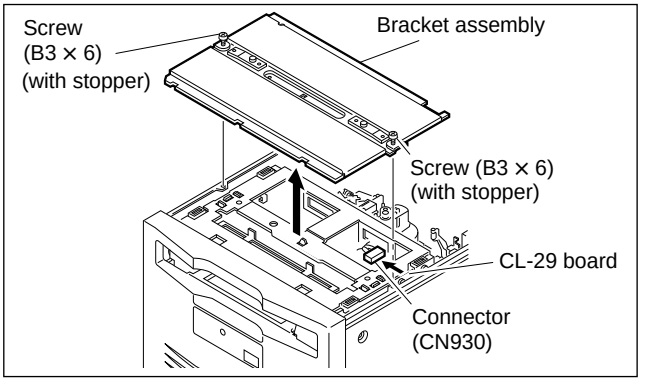
1-1-2. Cassette Compartment Removal/ Installation

Removal

Note

Take out the tape before removing the cassette compartment when the tape exists in the cassette compartment.

1. Turn the power OFF.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD assembly. (Refer to Section 1-1-1.)
4. Loosen the two screws and remove the cassette compartment bracket assembly.
5. Disconnect the connector (CN930) on CL-29 board.

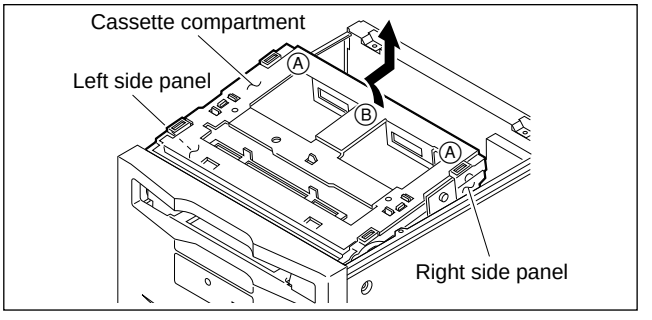


Removal of the Bracket Assembly

6. Hold the portions marked Ⓐ (two) of the cassette compartment as shown in the figure and lift straight up slightly. Then come off the four legs for fixing positions of the cassette compartment.
7. Hold the portion marked Ⓑ (one) of the cassette compartment as shown in the figure and slide the back and forward by suspending it in the direction of the arrow.
   Then remove the cassette compartment from the unit.

   CAUTION

   Do not move the cassette compartment to right and left. If unnecessary force is applied, a gear position might be changed or some parts might be removed.

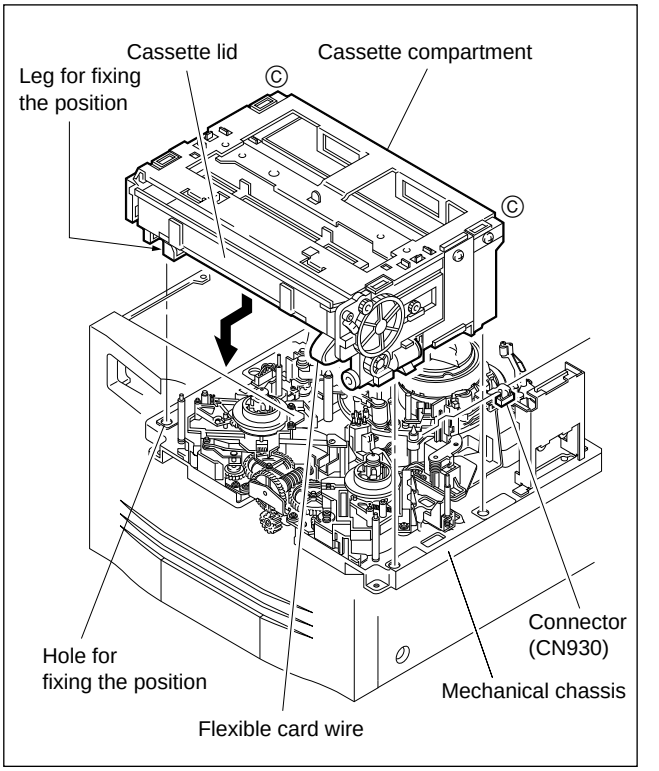


Removal of the Cassette Compartment

8. When putting the removed cassette compartment outside of the unit, make the four legs for fixing position faced down.
   (Because the flexible card wire might be get damaged if the cassette lid is faced down.)

Installation

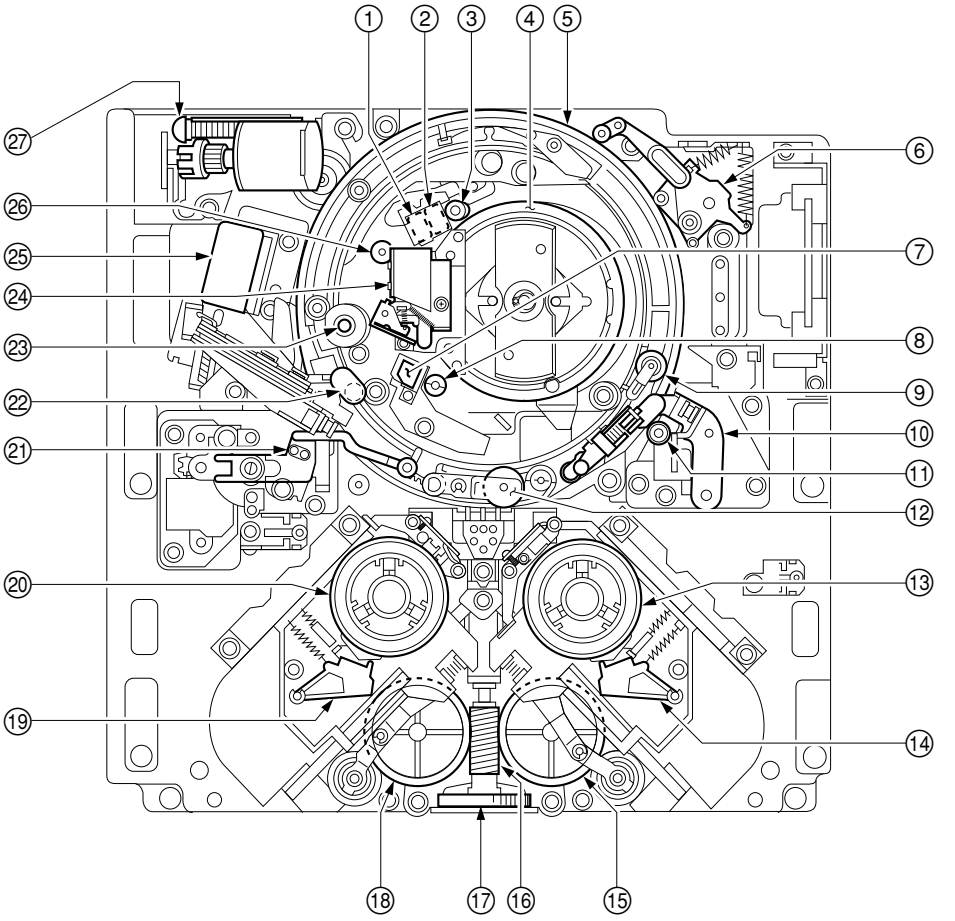
9. Put the harness of the connector (CN930) disconnected in step 5 to the place that is not caught between chassis and cassette compartment.
10. Install the cassette compartment while inserting slantingly in the direction as shown in the figure.
11. While pressing a portions marked Ⓒ (two) of the cassette compartment as shown in the figure, insert the four legs for fixing the positions of the cassette compartment into the four holes for fixing the positions of the mechanical chassis.
12. Connect the connector (CN930) on the CL-29 board.
13. After confirming that the cassette compartment is fixed to the chassis surely , install the bracket assembly.



Installation of the Cassette Compartment

1-2. Main Parts Layout

1-2-1. Main Mechanical Parts Layout



<Upper-side view>

INDEX

① CTL/TC head
② CTL/TC erase head
③ TG-3 tape guide
④ Head drum
⑤ Threading ring
⑥ T tension regulator arm
⑦ Full erase head
⑧ TG-2 tape guide
⑨ CTL/TC head cleaner
⑩ T drawer arm
⑪ TG-10 tape guide
⑫ Pinch roller
⑬ T reel table
⑭ T brake assembly
⑮ T worm wheel
⑯ Worm gear
⑰ Drive gear
⑱ S worm wheel
⑲ S brake assembly
⑳ S reel table
㉑ S tension regulator arm
㉒ TG-0 tape guide
㉓ Capstan shaft
㉔ Cleaning roller block
㉕ Pinch press block
㉖ TG-4 tape guide
㉗ Threading gear block

1-2-2. Printed Circuit Boards Layouts

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IF-682/683 ..... ⑦

MA-83 ..... ⑧
MEM-83 ..... ⑨
MS-54 ..... ⑩

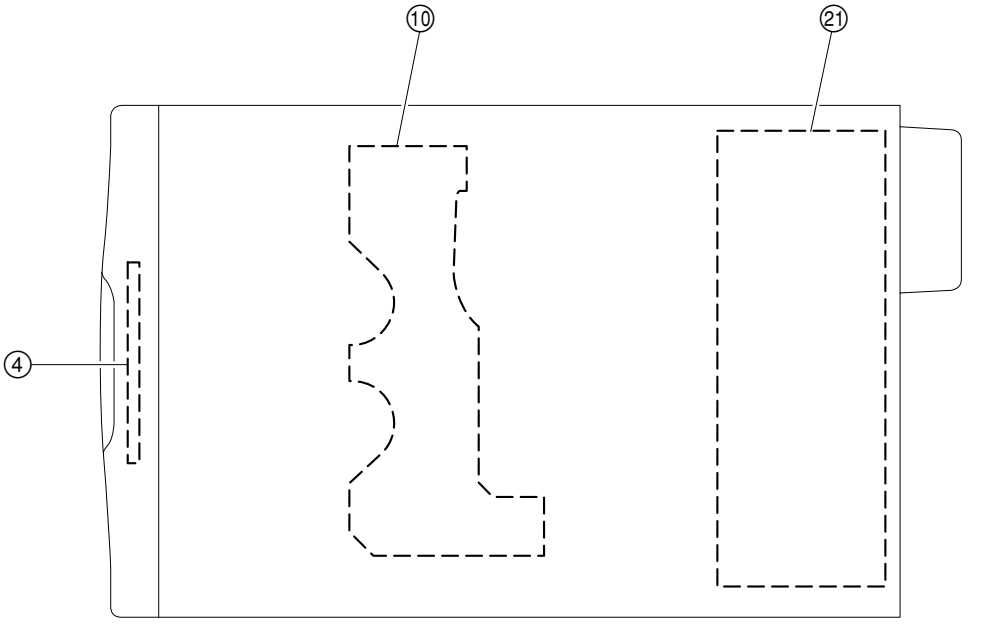
PC-70 ..... ⑪
PD-35 ..... ⑫
PTC-54 ..... ⑬
PTC-59 ..... ⑭
PTC-71 ..... ⑮

RM-82 ..... ⑯

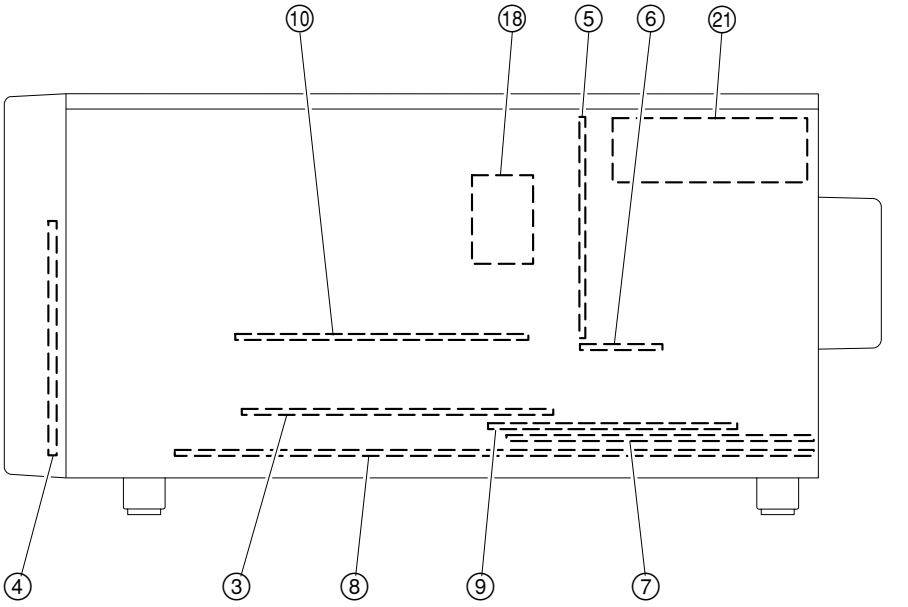
SE-344 ..... ⑰
SE-358 ..... ⑱

TR-78 ..... ⑲
TR-79 ..... ⑳

Switching regulator ..... ㉑



<Upper-side view>



<Right-side view>

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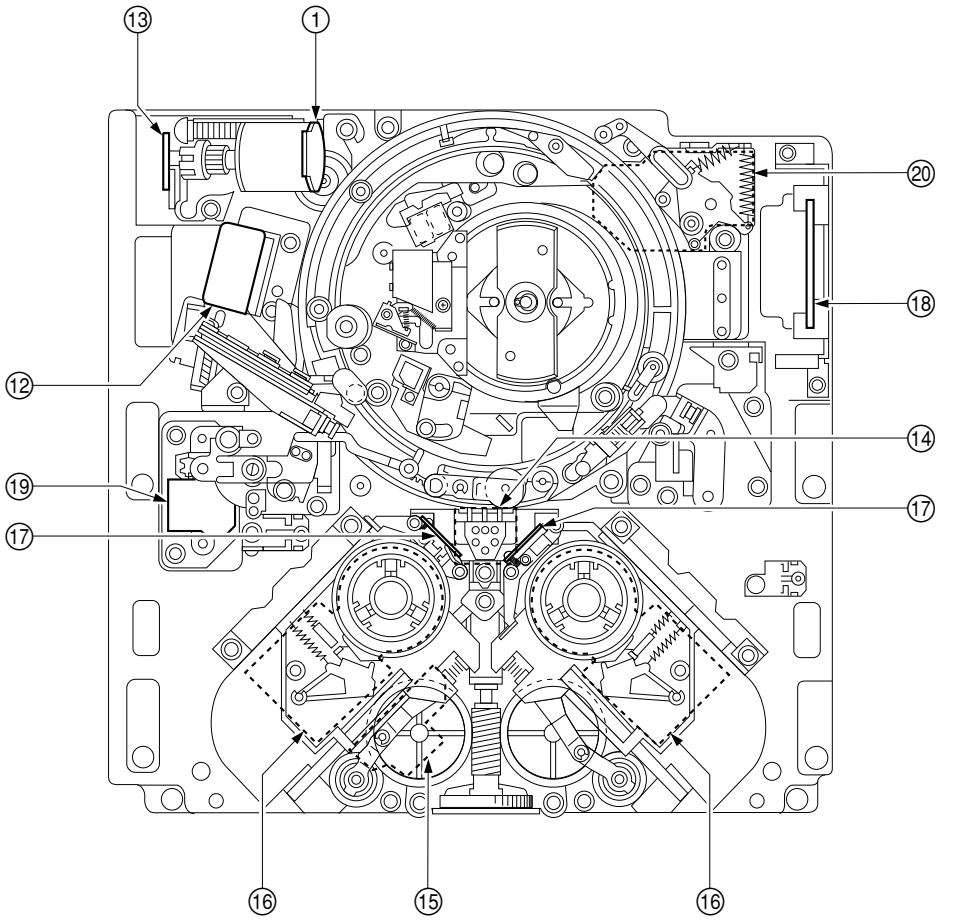
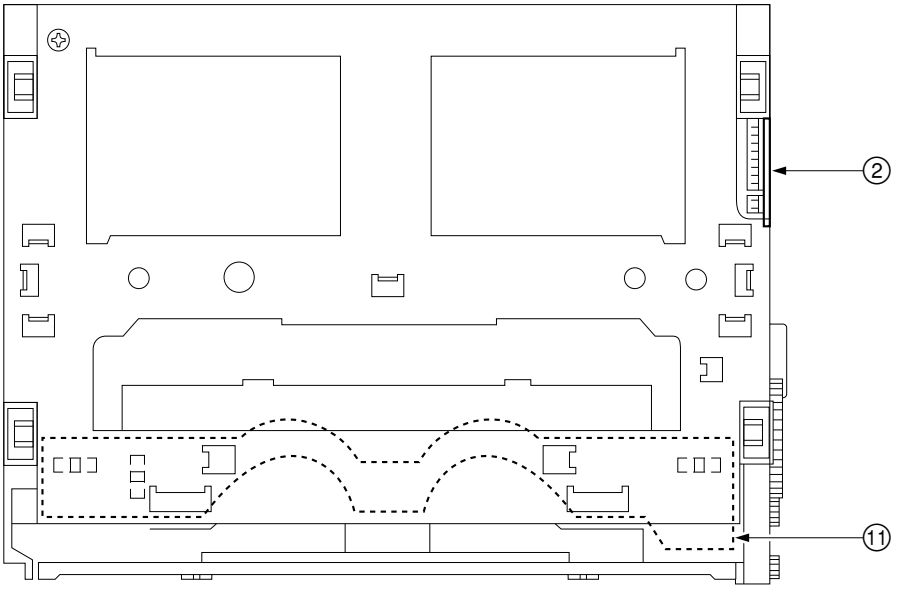


<Upper-side view>

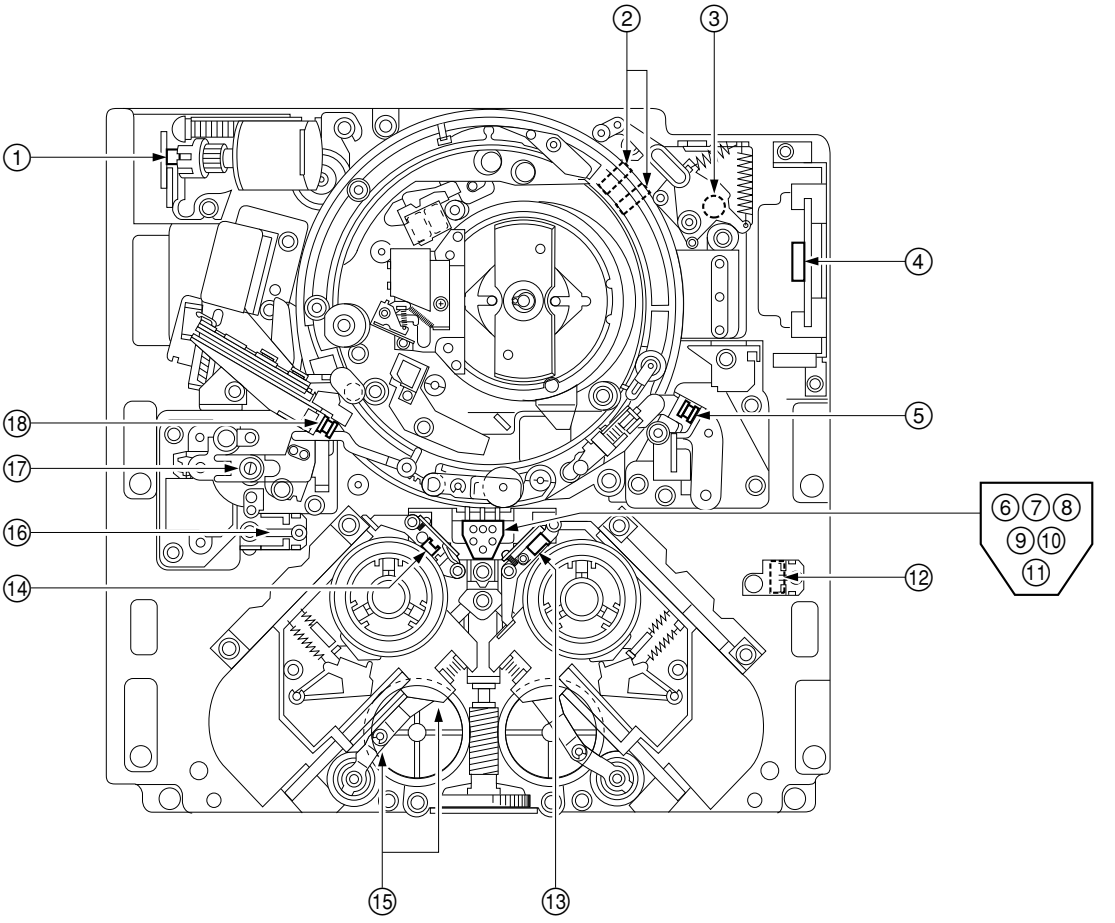
△
Rear



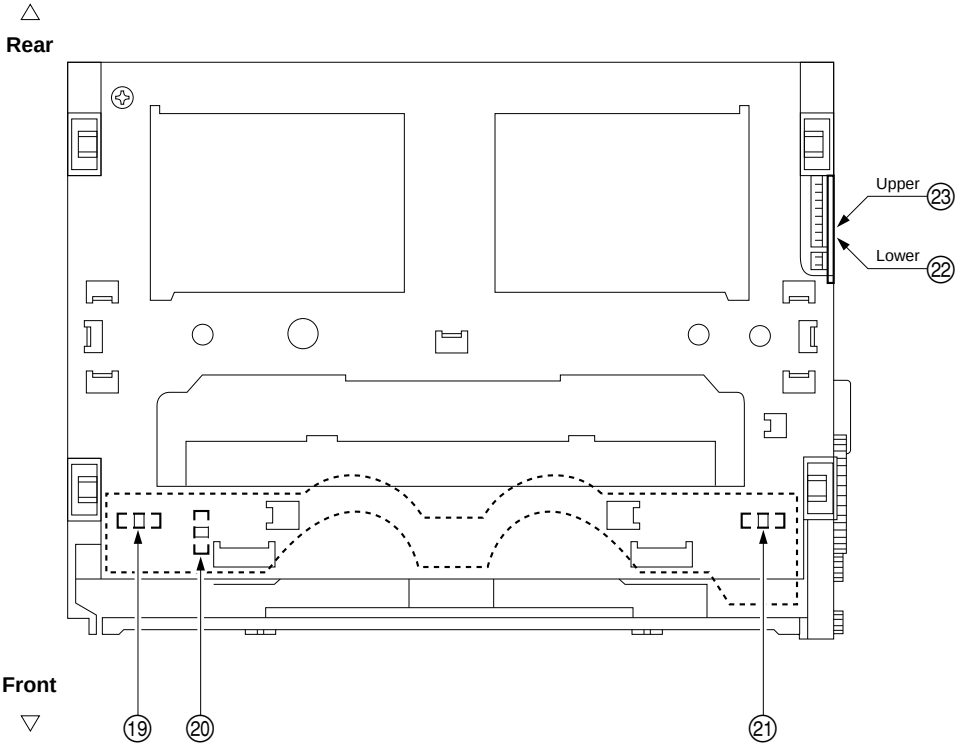
Front
▽

<Upper-side view of cassette compartment>

1-2-3. Function Descriptions and Sensors Layouts



<Upper-side view>



<Upper-side view of cassette compartment>

① **Threading motor rotation sensor**
The threading motor rotation sensor detects the rotation speed of the threading motor.
The FG output signal of this detection sensor is input to the servo circuit to control the threading speed so that the tape is not damaged during threading and unthreading.

② **Threading-end/unthreading-end sensor**
This sensor detects whether the threading ring reaches the threading-end or unthreading-end position.

③ **T tension regulator arm sensor**
During recording and playback, this sensor detects the tension arm position and controls the reel torque to keep a constant T tape tension.

④ **Condensation sensor**
This sensor detects whether the dew condensation occurs in the unit.

⑤ **Tape top sensor**
This sensor detects the top of the tape, and in addition detects the tape end of the tape that runs in the rewind direction.

⑥ **Cassette ID-1 sensor**
⑦ **Cassette ID-2 sensor**
⑧ **Cassette ID-3 sensor**
⑨ **Cassette ID-4 sensor**
⑩ **Cassette ID-5 sensor**
⑪ **Cassette ID-6 sensor**
When the tape is inserted into the unit, this sensor distinguishs the type of the cassette tape.

⑫ **L Cassette REC INHIBIT sensor**
This is a REC inhibit plug detector switch for the large cassette.

⑬ **T reel table rotation sensor**
This sensor detects the rotation of the take-up reel table. The FG output signal of this sensor is input to the servo circuit to control the rotation speed of the reel motor.

⑭ **S reel table rotation sensor**
This sensor datects the rotation of the supply reel table. The FG output signal of this sensor is input to the servo circuit to control the rotation speed of the reel motor.

⑮ **Reel L/S position sensor**
This sensor detects whether the reel table moves to the correct position according to the size of the inserted cassette tape.

⑯ **S cassette REC INHIBIT sensor**
This is a REC inhibit plug detection switch for the small cassette.

⑰ **S tension regulator arm sensor**
During recording and playback, this sensor detects the tension arm position and controls the reel torque to keep a constant tape tension.

⑱ **Tape end sensor**
This sensor detects the end of the tape that runs in the forward direction.

⑲ **Cassette-in sensor (L)**
This sensor detects whether a cassette is being inserted.

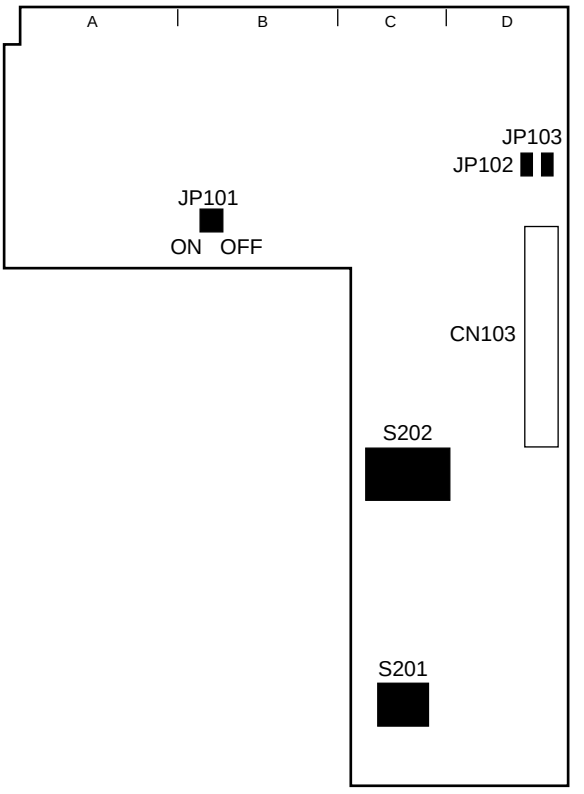
⑳ **Cassette L/S size sensor**
This sensor detects whether the inserted cassette tape is an L size or S size.

㉑ **Cassette-in sensor (R)**
This sensor detects whether a cassette is being inserted.

㉒ **Cassette-down (2) sensor**
㉓ **Cassette-down (1) sensor**
The cassette-down (1) sensor detects the movement of the cassette compartment through combined ON/OFF operation of the cassette-down (2) sensor, the cassette-down (1) sensor, and a cassette-in sensor.

1-3. Setting of Switches and Jumper Plugs on Board

IF682/683 board



Switches on IF-682/683 board

- S201
  This switch (4-pin DIP switch) is used during factory setting.
  Factory setting: All OFF

- S202
  This switch (8-pin DIP switch) is used during factory setting.
  Factory setting: All OFF

- JP101
  This jumper plug is used to select the term power output of SCSI.
  ON SHORT: Term power output ON
  OFF SHORT: Term power output OFF
  Factory setting: ON SHORT

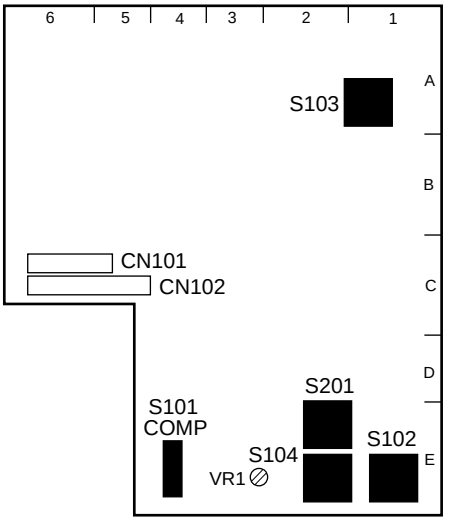
- JP102 and JP103
  These jumper plugs are used to select the SCSI chip mode and firmware.
  The firmware is selected by the setting below.

JP102	JP103	
SHORT	OPEN	For GY-2120WD/2120WS
OPEN	SHORT	For DMS-B9WD/B9WS

Factory setting:

JP102	JP103
SHORT	OPEN

DSP-78 board



Switches on DSP-78 board

- S101
  COMP switch
  This switch sets whether to compress data during write.
  SCSI: Functional extension position
  (Same as in the ON position presently.)
  ON: Compresses data during write.
  OFF: Not compress data during write.
  Factory setting: OFF

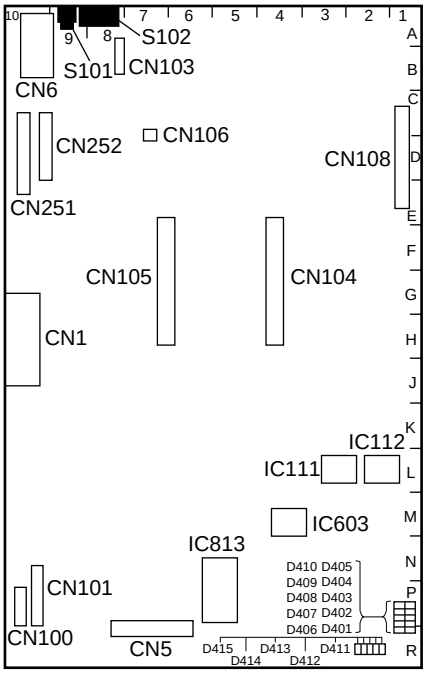
- S102
  EJECT switch
  This switch forcibly ejects the tape. Use this switch only when some trouble occurs.

- S103
  UNLOAD switch
  This switch is used to load and unload a cassette.

- S104
  RECOVER switch
  This switch recovers the tape when the tape is not unloaded properly.

- S201
  DIAG switch
  This switch is used to perform the self-diagnosis of this unit. (For more details, refer to the “Maintenance Mode in Section 6”.)

MA-83 board



Switches on MA-83 board

- S101
  ID switch
  This switch sets the SCSI address of this unit.
  Factory setting: 5

- S102
  SETUP switch (8-pin DIP switch)
  This switch is used to set up the operation mode.

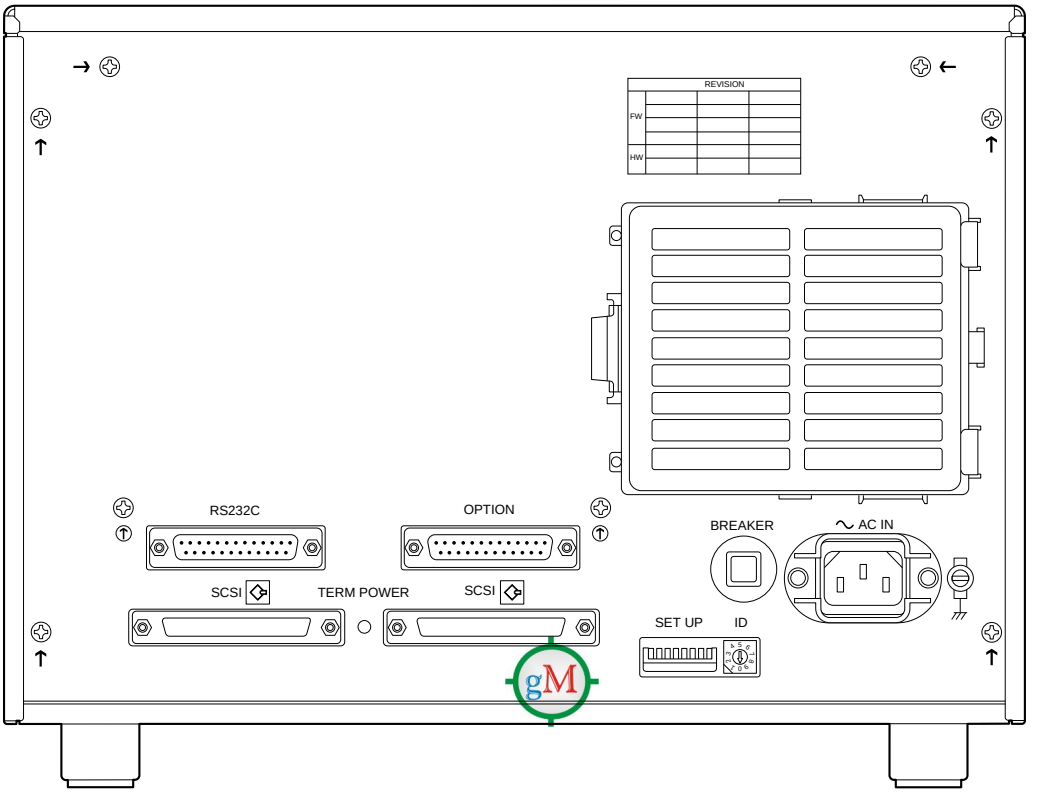
Switch No.	Name	ON	OFF
1	Fast Unload	Fast Unload	Normal Unload
2	Auto Format	ON	OFF
3	Special Eject	ON	OFF
4	Unused		
5	Unused		
6	Unused		
7	Loading Mode	Manual Loading	Auto Loading
8	Baud Rate	Variable	Fixed at 9600 bps

Factory setting: All OFF

* Special Eject
  This function performs the tape cleaning when a failure occurs during READ/WRITE operation on the tape.

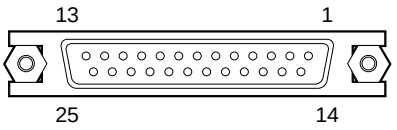
1-4. Connector/Cable Information

Rear panel



RS-232C: 25-pin (female) **RS-232C: 25-pin (female)**

< External View >



GY-2120 ← **PC** →

Pin No.	I/O	Signal	25pin	9pin	Signal
1	—	GND	1		GND
2	O	TX	2	(3)	TX
3	I	RX	3	(2)	RX
4	O	RTS	4	(7)	RTS
5	I	CTS	5	(8)	CTS
6	I	DSR	6	(6)	DSR
7	—	GND	7	(5)	GND
8	I	DCD	8	(1)	DCD
9	—	NC	9		NC
10	—	NC	10		NC
11	—	NC	11		NC
12	—	NC	12		NC
13	—	NC	13		NC
14	—	NC	14		NC
15	—	NC	15		NC
16	—	NC	16		NC
17	—	NC	17		NC
18	—	NC	18		NC
19	—	NC	19		NC
20	O	DTR	20	(4)	DTR
21	—	NC	21	—	NC
22	—	NC	22	—	NC
23	—	NC	23	—	NC
24	—	NC	24	—	NC
25	—	NC	25	—	NC

( ) ; Pin numbers is the case of 9-PIN

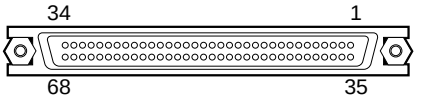
Information

Cable Connection

When connecting PC and GY-2120, connect the each connector refering to the above information.

SCSI: 68-pin (female): GY-2120WD/2120WS

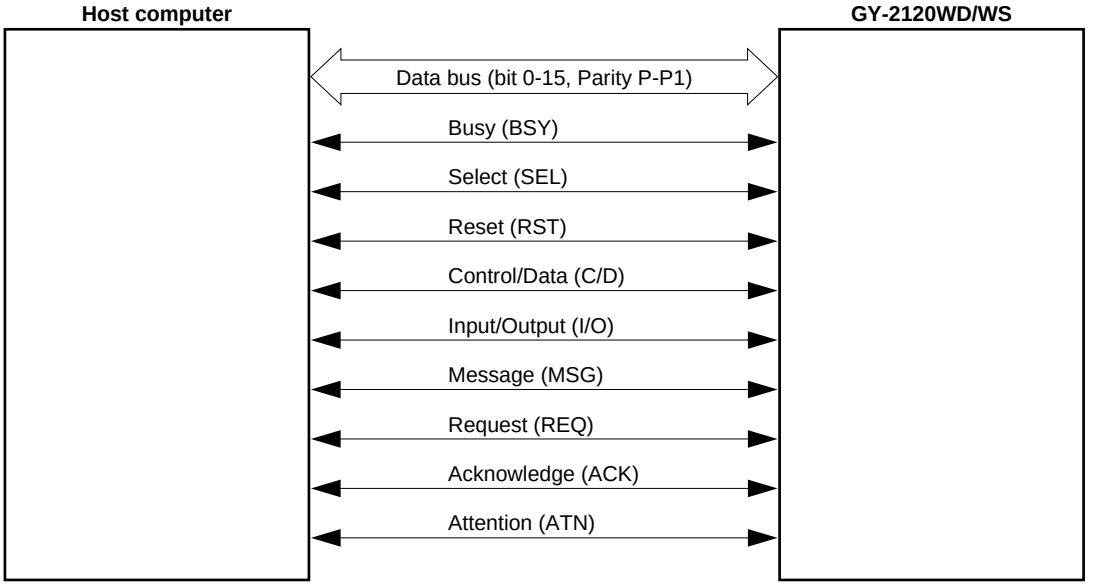
< External View >



Pin No.	GY-2120WD		GY-2120WS	
	I/O	Signal	I/O	Signal
1	I/O	+DB12	—	GND
2	I/O	+DB13	—	GND
3	I/O	+DB14	—	GND
4	I/O	+DB15	—	GND
5	I/O	+DBP1	—	GND
6	—	GND	—	GND
7	I/O	+DB0	—	GND
8	I/O	+DB1	—	GND
9	I/O	+DB2	—	GND
10	I/O	+DB3	—	GND
11	I/O	+DB4	—	GND
12	I/O	+DB5	—	GND
13	I/O	+DB6	—	GND
14	I/O	+DB7	—	GND
15	I/O	+DBP	—	GND
16	I/O	DIFFSENS	—	GND
17	I/O	TERMPWR	I/O	TERMPWR
18	I/O	TERMPWR	I/O	TERMPWR
19	I/O	RESERVED	I/O	RESERVED
20	I/O	+ATN	—	GND
21	—	GND	—	GND
22	I/O	+BSY	—	GND
23	I/O	+ACK	—	GND
24	I/O	+RST	—	GND
25	I/O	+MSG	—	GND
26	I/O	+SEL	—	GND
27	I/O	+C/D	—	GND
28	I/O	+REQ	—	GND
29	I/O	+I/O	—	GND
30	—	GND	—	GND
31	I/O	+DB8	—	GND
32	I/O	+DB9	—	GND
33	I/O	+DB10	—	GND
34	I/O	+DB11	—	GND

Pin No.	GY-2120WD		GY-2120WS	
	I/O	Signal	I/O	Signal
35	I/O	−DB12	I/O	−DB12
36	I/O	−DB13	I/O	−DB13
37	I/O	−DB14	I/O	−DB14
38	I/O	−DB15	I/O	−DB15
39	I/O	−DBP1	I/O	−DBP1
40	—	GND	I/O	GND
41	I/O	−DB0	I/O	−DB0
42	I/O	−DB1	I/O	−DB1
43	I/O	−DB2	I/O	−DB2
44	I/O	−DB3	I/O	−DB3
45	I/O	−DB4	I/O	−DB4
46	I/O	−DB5	I/O	−DB5
47	I/O	−DB6	I/O	−DB6
48	I/O	−DB7	I/O	−DB7
49	I/O	−DBP	—	−DBP
50	—	GND	—	GND
51	I/O	TERMPWR	I/O	TERMPWR
52	I/O	TERMPWR	I/O	TERMPWR
53	I/O	RESERVED	I/O	RESERVED
54	I/O	−ATN	—	−ATN
55	—	GND	I/O	GND
56	I/O	−BSY	—	−BSY
57	I/O	−ACK	I/O	−ACK
58	I/O	−RST	I/O	−RST
59	I/O	−MSG	I/O	−MSG
60	I/O	−SEL	I/O	−SEL
61	I/O	−C/D	I/O	−C/D
62	I/O	−REQ	I/O	−REQ
63	I/O	−I/O	I/O	−I/O
64	—	GND	I/O	GND
65	I/O	−DB8	I/O	−DB8
66	I/O	−DB9	I/O	−DB9
67	I/O	−DB10	I/O	−DB10
68	I/O	−DB11	I/O	−DB11

SCSI BUS SIGNAL LINES



The bus driver of GY-2120WD is differential type.
The bus driver of GY-2120WS is single ended type.
The data bus supports 16 bits.

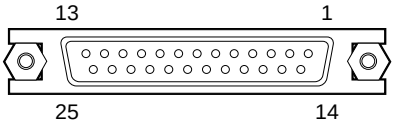
SIGNAL LINE INFORMATION

BSY	Indicates that the SCSI bus is being used.
SEL	Initiator selects the target in selection phase and the target selects the initiator in reselection phase.
RST	Requires to reset all the devices connected to the SCSI bus. However, this signal is not turned on in GY-2120WD/WS.
C/D	Identifies information. (1: Control information* / 0: Data information.)
I/O	Determines the direction of transmission. (1: Initiator → Target / 0: Target → Initiator)
MSG	The target drives this signal. (1: Message information / 0: Command status data information.)
REQ	The target drives this signal. This signal is used for handshake of data transmission.
ACK	The initiator drives this signal. This signal is used for handshake of data transmission.
ATN	The initiator drives this signal. This signal indicates that a message is required by the initiator.

* : The control information is the command, status or message information.

OPTION: 25-pin (female)

< External View >



Pin No.	I/O	Signal
1	—	GND
2	O	TX
3	I	RX
4	O	RTS
5	I	CTS
6	I	DSR
7	—	—
8	—	DCD
9	—	Reserved 1
10	—	Reserved 2
11	—	Reserved 3
12	—	NC
13	—	NC
14	—	NC
15	—	NC
16	—	NC
17	—	NC
18	—	NC
19	—	NC
20	O	DTR
21	—	NC
22	—	NC
23	—	NC
24	—	NC
25	—	NC

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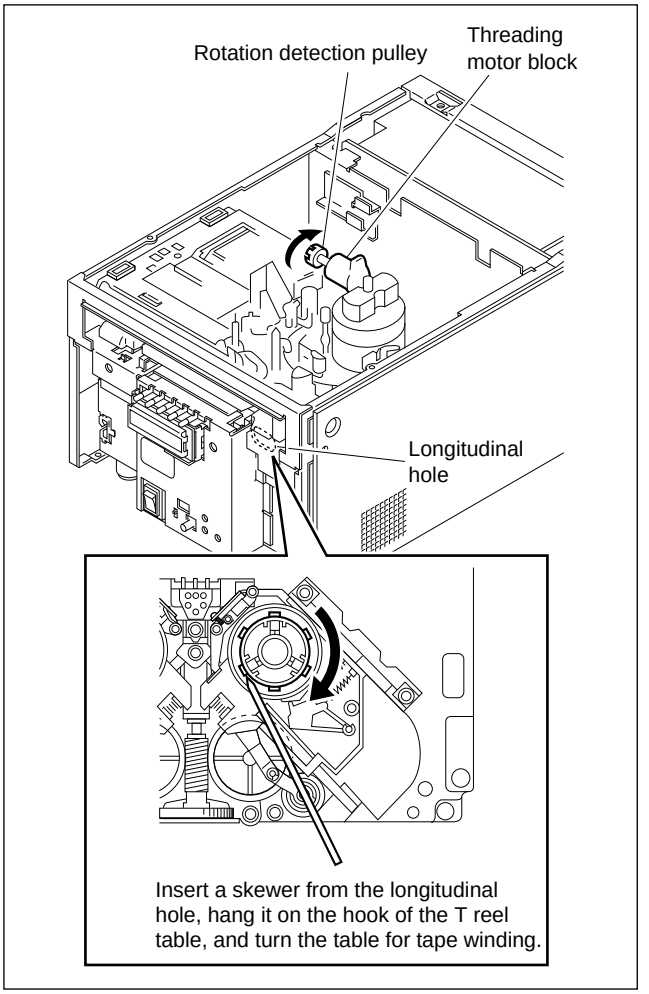
1-5. Cassette Ejection in the Case of Tape Slack

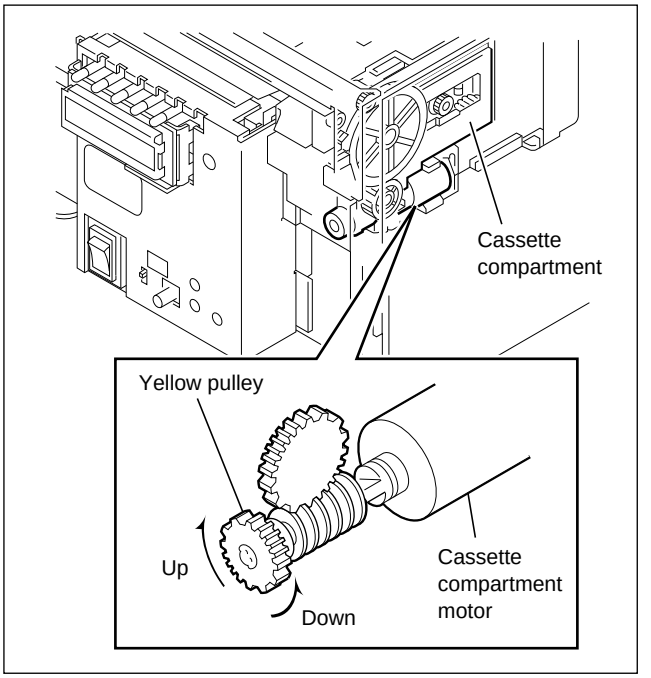
When a tape is slacked in DRIVE, take out the cassette tape following the procedure written below.
At this time, be careful not to damage the tape.

1. Turn the power OFF and remove the power cord.
2. Remove the three screws and remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD assembly. (Refer to Section 1-1-1.)
4. Remove the four screws (B3 × 6) and remove the front panel. (Refer to Section 1-1-1.)
5. Make slack in the tape by rotating the rotation datection pulley of the threading motor block with fingers for about a half turn in the direction of the arrow.
6. Insert a skewer (or the equivalent) from the longitudinal hole on the front panel, turn the T reel table clockwise, and wind the tape.


Rotation detection pulley
Threading motor block
Longitudinal hole
Insert a skewer from the longitudinal hole, hang it on the hook of the T reel table, and turn the table for tape winding.

Winding the Tape

7. Repeat the steps 5 and 6 until the unit is put into the unthreading-end state and the tape is completely taken-up.
8. Turn the yelleow pulley of the cassette compartment motor shown in the figure clockwise until the cassette tape is ejected completely.



Ejection of a Cassette Tape

CAUTION

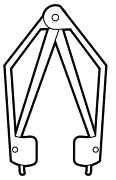
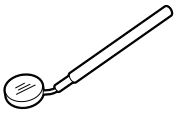
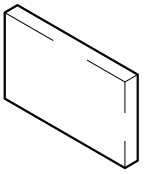
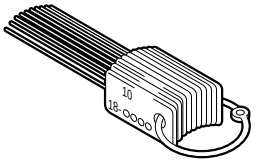
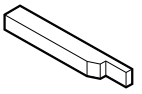
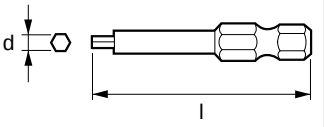
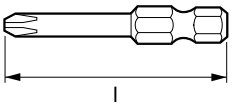
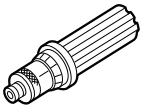
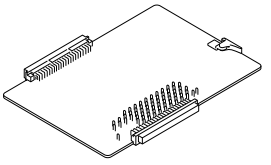
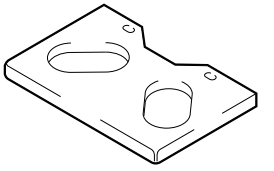
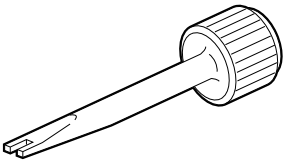
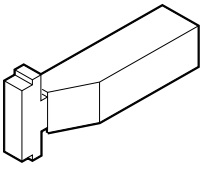
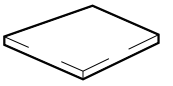
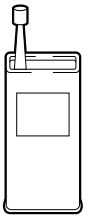
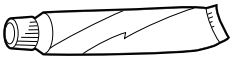
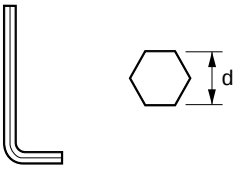
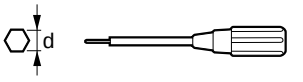
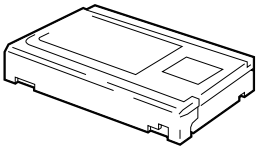
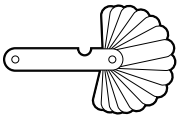
Do not turn the T reel table with a metal stick. This may damage the FG ring of the T reel table.

Be sure to hang a skewer on the hook of the T reel table shown in the figure on the left and turn it. Do not push the FG ring surface of the T reel table. This may damage the FG ring surface.

1-6. Fixtures and Measuring Equipment for Adjustment

1-6-1. Fixtures

Fig. No.	Part No.	Description	Inscription No.	For use
1	J-6035-070-A	Extraction Tool (for PLCC socket)	————	Extraction of IC (PLCC type)
2	J-6080-029-A	Small Dental Mirror (Round type ø12)	————	Cassette pillar height adjustment
3	J-6086-570-A	Reference Flat Plate	SL-657	CTL/TC head zenith adjustment
4	J-6152-450-A	Wire Clearance Check Gauge Set	————	Clearance check
5	J-6190-800-A	Tension Regulator Slantness Check Tool	BW-080	Slant guide slantness adjustment
6	J-6251-090-A	Torque screwdriver's hexagonal bit (d=2.5 mm, l=120 mm)	————	Tightening screws to fix a drum assembly and upper drum assembly
7	J-6323-420-A	Torque screwdriver's bit (+2 mm, l=75 mm)	————	Tightening screws to fix a brush/slip ring assembly
	J-6323-430-A	Torque screwdriver's bit (+3 mm, l=90 mm)	————	Tightening screws to fix a reel motor assembly or a ring roller
8	J-6252-510-A	Torque screwdriver (6 kg•cm)	JB-5251	Tightening screws
	J-6252-520-A	Torque screwdriver (12 kg•cm)	JB-5252	Tightening screws
9	A-8312-673-A	Extension Board, EX-602	————	EQ-66 Board
10	J-6320-870-A	Reel Motor Shaft Slantness Check Fixture	MW-087	Reel motor shaft slantness adjustment
11	J-6320-880-A	Cassette Reference Plate (L)	MW-088	Reel table height adjustment, Reel motor shaft slantness adjustment
12	J-6322-610-A	Tape Guide Adjustment Driver	MW-261	Tape path alignment
13	J-6329-350-A	Reel Table Height Gauge	MW-935	Reel table height adjustment
14	3-184-527-01	Cleaning Cloth (15 cm × 15 cm)	————	Cleaning
15	7-432-114-11	Locking Compound 200 g	————	Inhibits loosening of screws.
16	7-661-018-18	Diamond Oil NT-68 50 ml	————	
17	7-651-000-10	Grease (SGL-601) 20 g	————	
18	7-700-736-05	L-shaped Hexagonal Wrench (d=1.5 mm)	————	
19	7-700-766-04	Hexagonal Wrench Driver (d=2.5 mm)	————	
20	8-960-074-01	Alignment Tape, YR5-1	————	RF alignments
	8-960-074-11	Alignment Tape, YR2-1	————	Tracking adjustments
21	9-911-053-00	Thickness Gauge	————	Clearance check
22	9-919-573-01	Clerning Liquid	————	Cleaning

① 	② 	③ 	④ 
⑤ 	⑥ 	⑦ 	⑧ 
⑨ 	⑩	⑪ 	⑫ 
⑬ 	⑭ 	⑮ 	⑯
⑰ 	⑱ 	⑲ 	⑳ 
㉑ 	㉒		

1-6-2. Measuring Equipment

It is recommended to use the measuring equipments listed below or the equivalents.
Each equipment is available as a standard product.

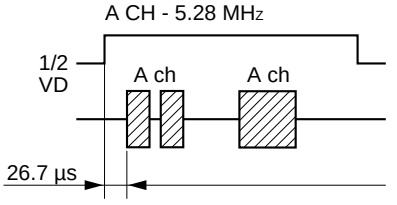
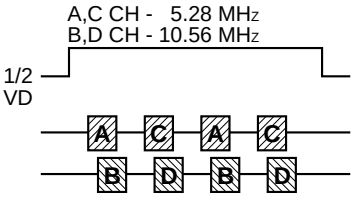
Equipment	Model Name	Remarks
Spectrum Analyzer	ADVANTEST R3261A	with external trigger function bandwidth: more than 100 MHz
Oscilloscope	TEKTRONIX 2465B	
Frequency Counter	ADVANTEST TR5821AK	
Digital Voltmeter	ADVANTEST TR6845	

1-6-3. Alignment Tapes

(1) YR2-1 (for tracking adjustment)

Part No. : 8-960-074-11

Contents

ID	Recording Signal	Use
——— 0 ———		• Tracking Adjustment • CTL Position Adjustment • PG Adjustment • CTL/TC Head Height Adjustment • CTL/TC Azimuth Adjustment
——— 72000 ———		• REC Head Height Adjustment Check
		
——— 90000 ———		

(2) YR5-1 (for RF alignment)

Part No. : 8-960-074-01

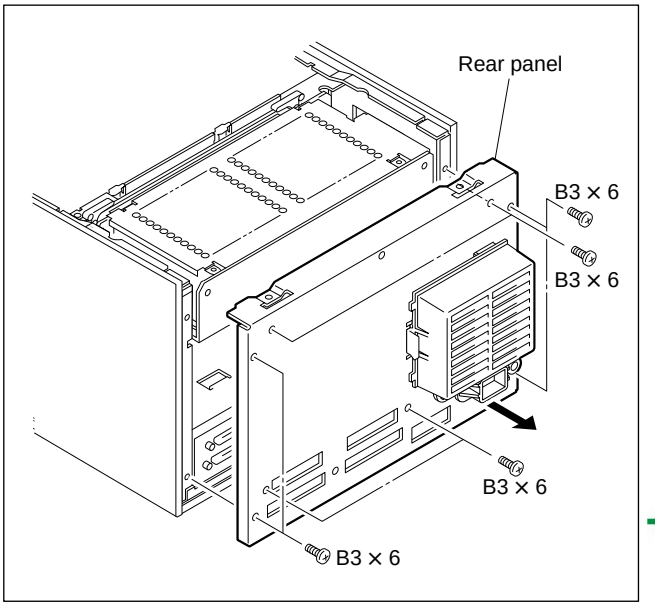
Contents

ID	CTL	Recording Signal (RF)	Use
——— 0 ———		Test Signal Randomize data	• RF Alignment/Check
——— 90000 ———			

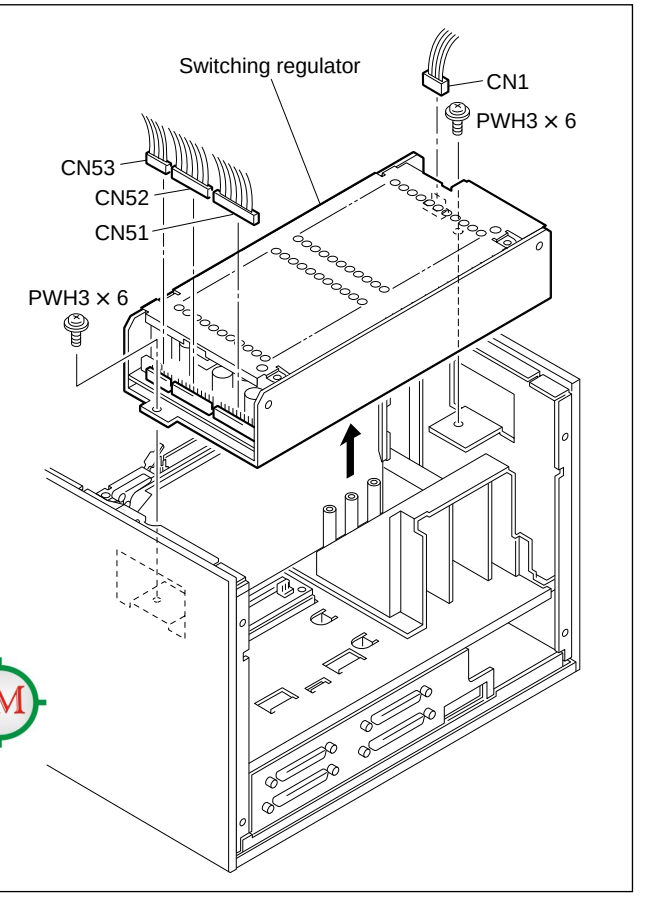
1-7. Power Block

1-7-1. Switching Regulator Replacement

1. Turn off the power and remove the power cord.
2. Remove the three screws (B4 × 5), then remove the upper lid. (Refer to section 1-1-1.)
3. Remove the eight screws (B3 × 6), then remove the rear panel.



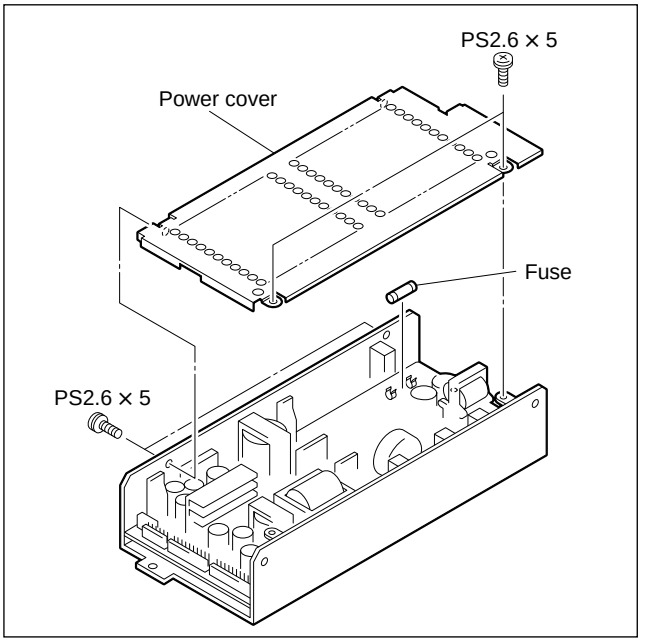
4. Disconnect the four connectors (CN1, CN51, CN52 and CN53).
5. Remove the two screws (PWH3 × 6).
6. Raise the switching regulator gently upward.



7. Install a switching regulator in the reverse order of removal.

1-7-2. Switching Regulator Fuse Replacement

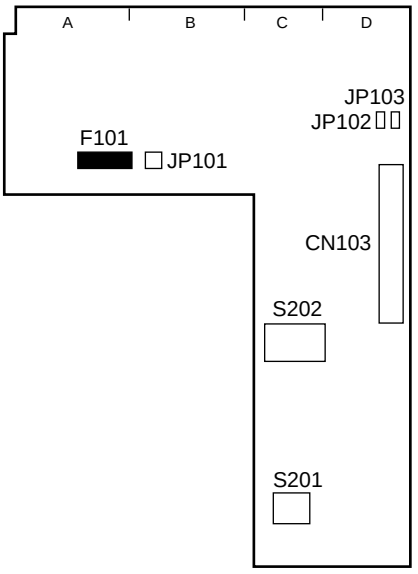
1. Remove the switching regulator from the main unit. (Refer to the “Switching Regulator Replacement” in Section 1-7-1.)
2. Remove the four screws (PS2.6 × 5), then remove the power cover.



3. Replace a fuse.
4. Install the switching regulator in the reverse order of removal.

1-7-3. Fuse Replacement on IF-682/683 Board

1. Remove the IF-682/683 board from the main unit. (Refer to the “MA-83 Board Replacement” in section 1-8-1.)
2. Replace a fuse on the IF-682/683 board.



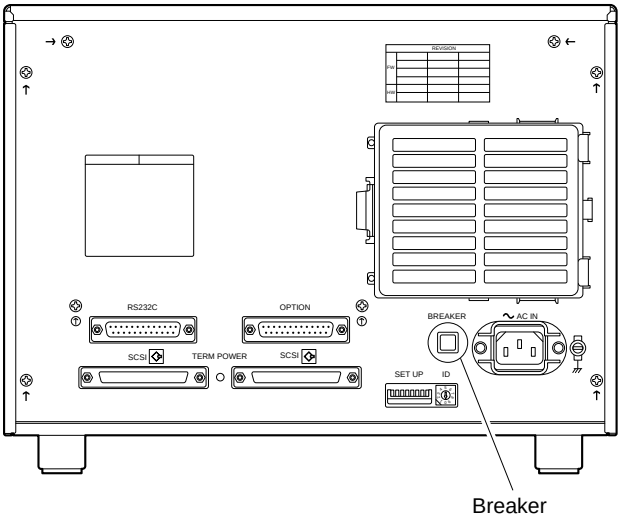
IF-682/683 BOARD (A SIDE)

3. Install the IF-682/683 board in the main unit in the reverse order of removal.

1-7-4. How to Reset the Circuit Breaker

When the breaker which connected to the power supply block is operated and the button is ejected, remove the cause of the problem and push the button.

Rear panel



1-7-5. Voltage and Power Requirements

WARNING

Be sure to operate the unit within the range of recommended power voltage.

Recommended power voltage: AC 100 to 240 V ±10%
Recommended power frequency: 50 Hz or 60 Hz
Power consumption: 200VA (at 100V)
192VA (at 240V)
Rush current: Power voltage 100 V IN; 15 A
Power voltage 240 V IN; 30 A

This unit's power line has a switching regulator with the power efficiencies 98%.

Note

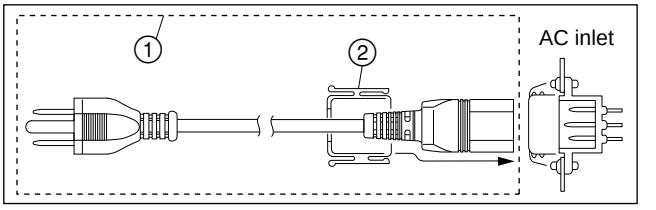
AC power supply is required a capacity which is commensurate with rush current.
If the capacity of the AC power supply is not enough, the breaker of AC power of a supply side may operate or this unit may not operate normaly.

1-7-6. Power Cord

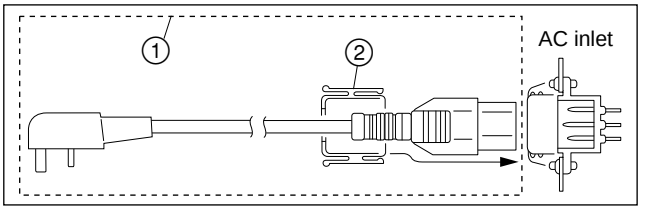
WARNING

To avoid a fire or an electric shock, use the specified power cord only when connecting.
Never use a injured power cord.

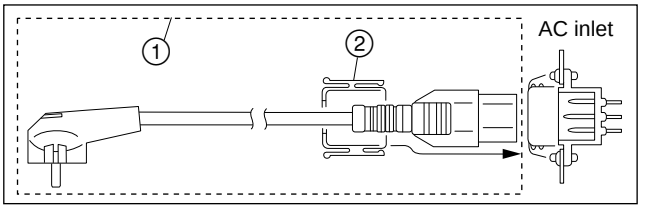
Power cord for the customer in the U.S.A. and Canada.
①DK-2401(UC) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(UC).



Power cord for the customer in the United Kingdom.
①DK-2401(UK) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(UK).



Power cord for the customer in Europe except the United Kingdom.
①DK-2401(AE) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(AE).



If the unit is used in the area except above, please consult with local Sony's sales/service office.

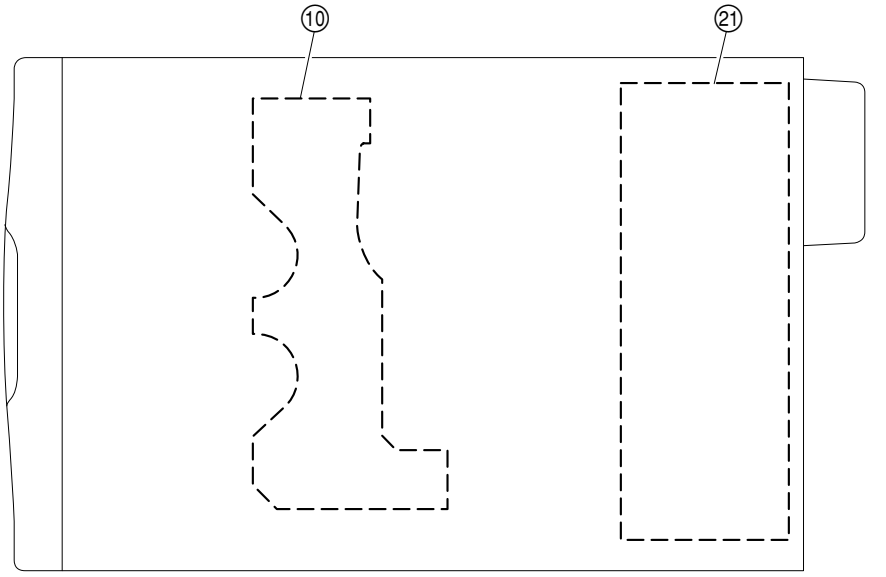
1-8. Boards Replacement

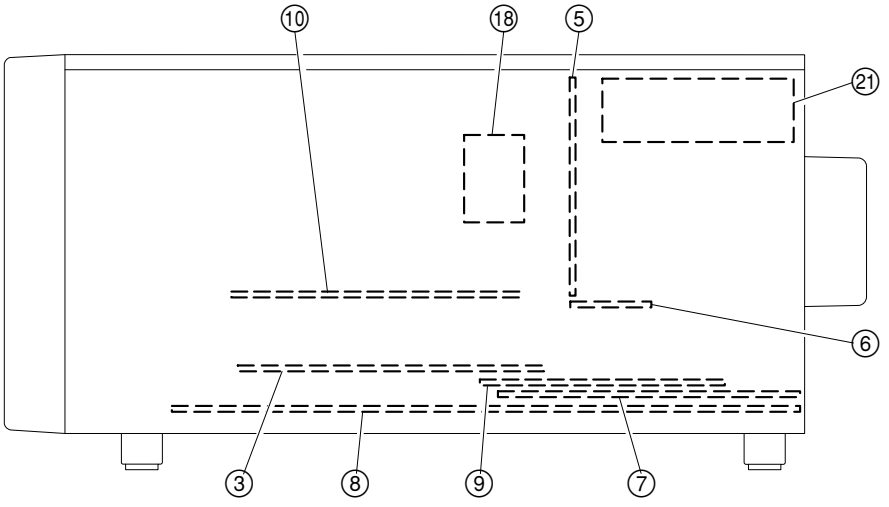
Note

When replacing boards (MA-83, IF-682/683) incorporating the ROM, check the ROM version. (If necessary, download the ROM.)

Index	Layouts No.	Adjustment Item.
1-8-2. DR-327	③	Refer to Section 6-4-3. Electrical adjustment item after board replacement.
—— EQ-66	⑤	Refer to Section 6-4-3. Electrical adjustment item after board replacement.
1-8-5. EX-603	⑥	————
—— IF-682/683	⑦	Refer to Section 6-4-3. Electrical adjustment item after board replacement.
1-8-1. MA-83	⑧	Refer to Section 6-4-3. Electrical adjustment item after board replacement.
—— MEM-83	⑨	Refer to Section 6-4-3. Electrical adjustment item after board replacement.
1-8-3. MS-54	⑩	Refer to Section 6-4-2. NV-RAM initialization Refer to Section 6-4-3. Electrical adjustment item after board replacement.
1-8-4. SE-358	⑱	————
1-7-1. Switching Regulator	㉑	Refer to Section 6-4-4. Electrical adjustment item after Switching regulator replacement.

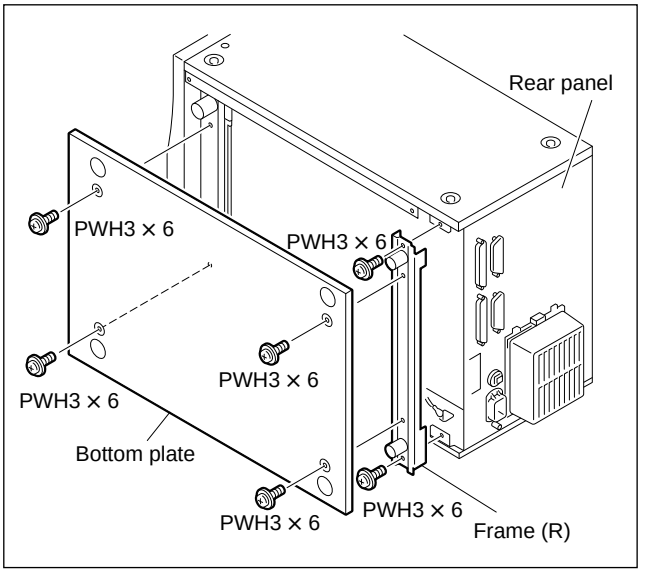
[Layouts]



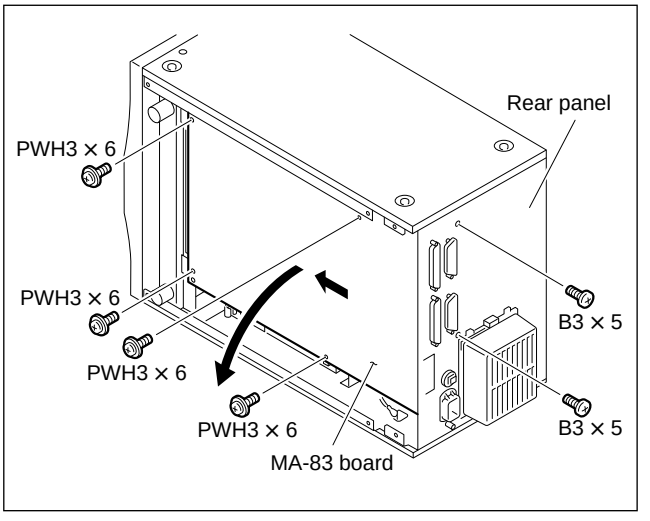


1-8-1. MA-83, MEM-83 and IF-682/683 Board Replacement

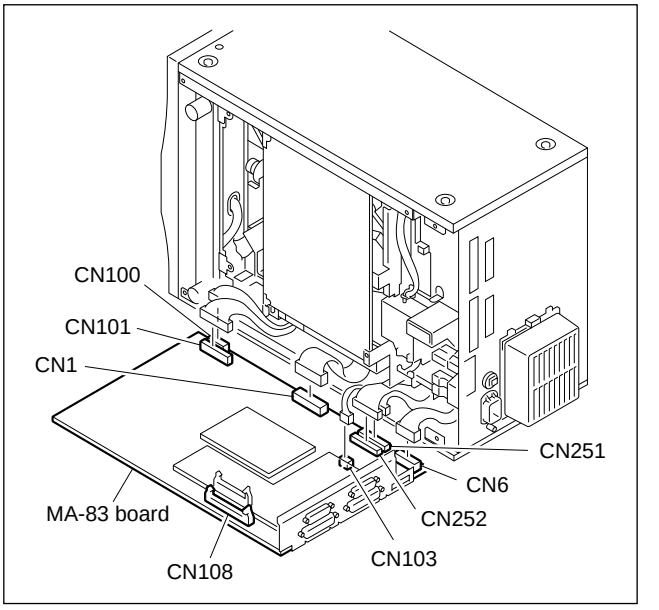
1. Turn off the power and remove the power cord.
2. Put the unit on its side down, remove the four screws (PWH3 × 6), then remove the bottom plate. (Refer to section 1-1-1.)
3. Remove the two screws (PWH3 × 6), then remove the frame(R).



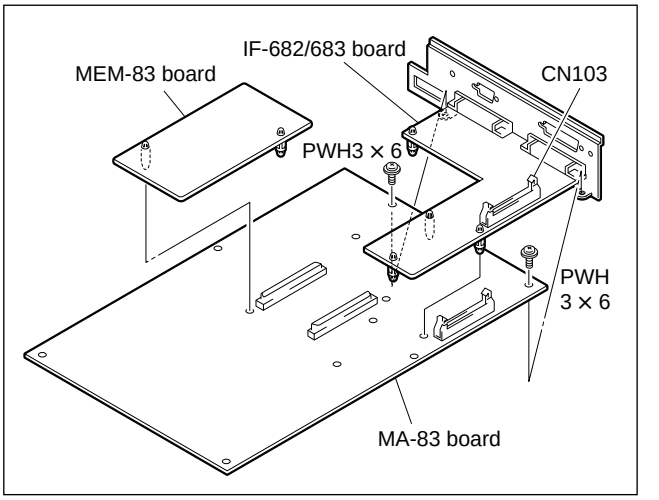
4. Remove the two screws (B3 × 5) and four screws (PWH3 × 6) and pull out the MA-83 board.
   At that time, slide the MA-83 board toward the front panel, then take out it in the direction indicated by the arrow.



5. Disconnect the eight connectors (CN1, CN6, CN100, CN101, CN103, CN108, CN251 and CN252).



6. Remove the MEM-83 board on the MA-83 board.
7. Disconnect one connector (CN103 on the IF-682/683 board).
8. Remove the two screws (PWH3 × 6), then remove the IF-682/683 board.

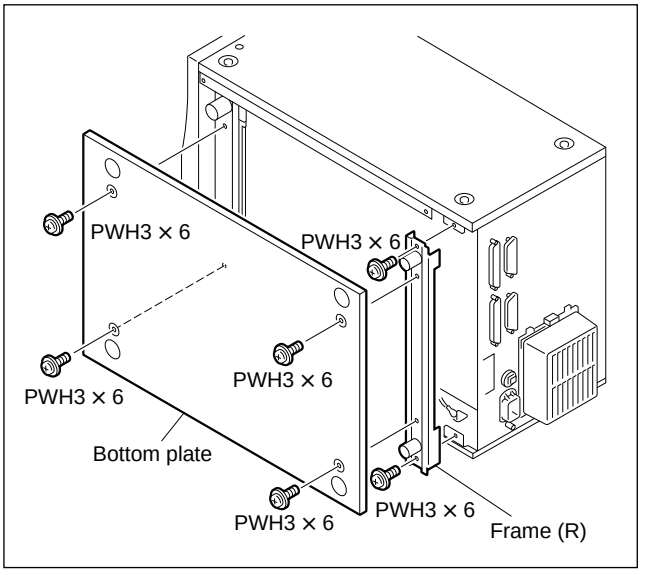


9. Install each board in the main unit in the reverse order of removal.

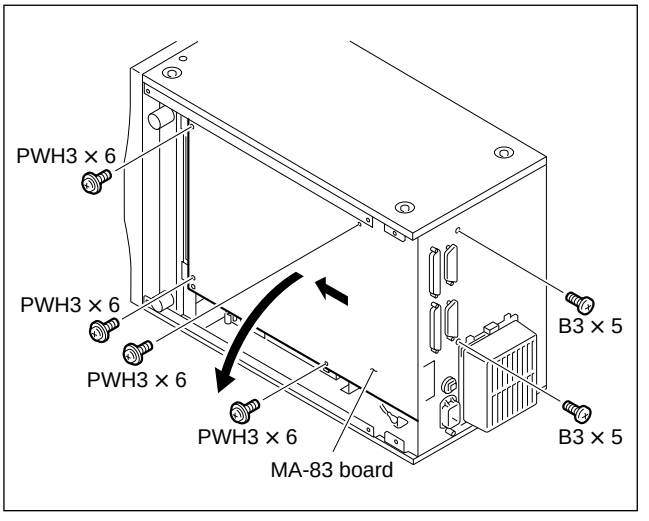
http://getMANUAL.com

1-8-2. DR-327 Board Replacement

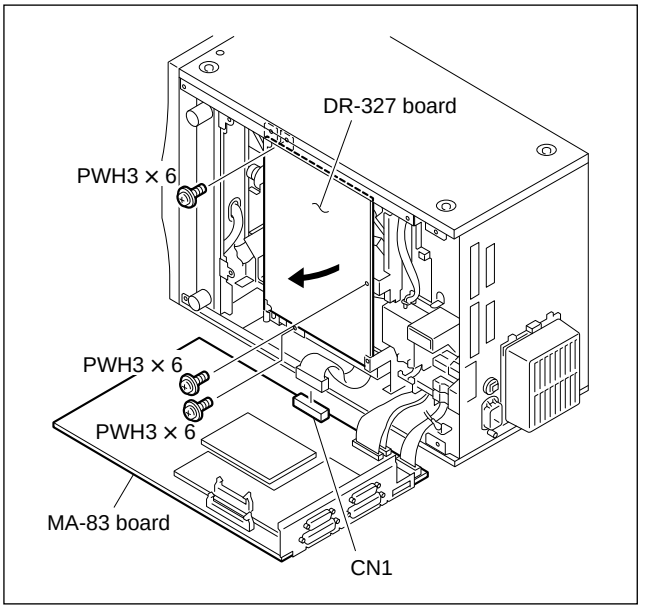
1. Turn off the power and remove the power cord.
2. Put the unit on its side down, remove the four screws (PWH3 × 6), then remove the bottom plate. (Refer to section 1-1-1.)
3. Remove the two screws (PWH3 × 6), then remove the frame(R).



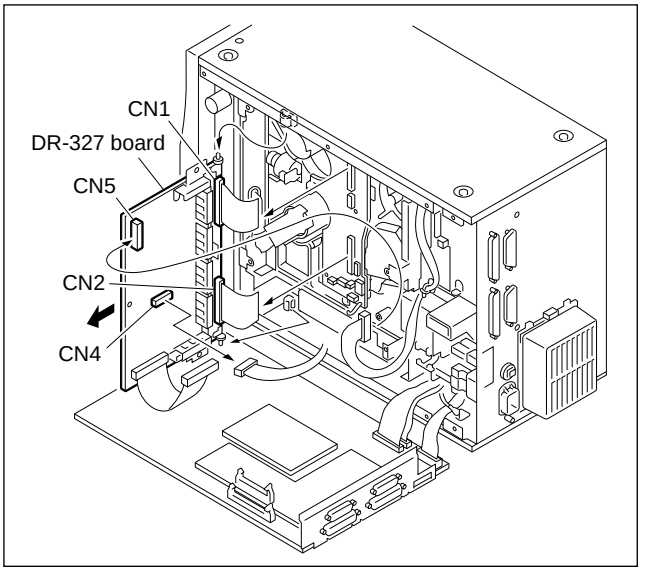
4. Remove the two screws (B3 × 5) and four screws (PWH3 × 6) and pull out the MA-83 board.
   At that time, slide the MA-83 board toward the front panel, then take out it in the direction indicated by the arrow.



5. Remove the connector (CN1) on the MA-83 board. Remove the three screws (PWH3 × 6) and turn the DR-327 board in the direction of the arrow by about 90 degrees.



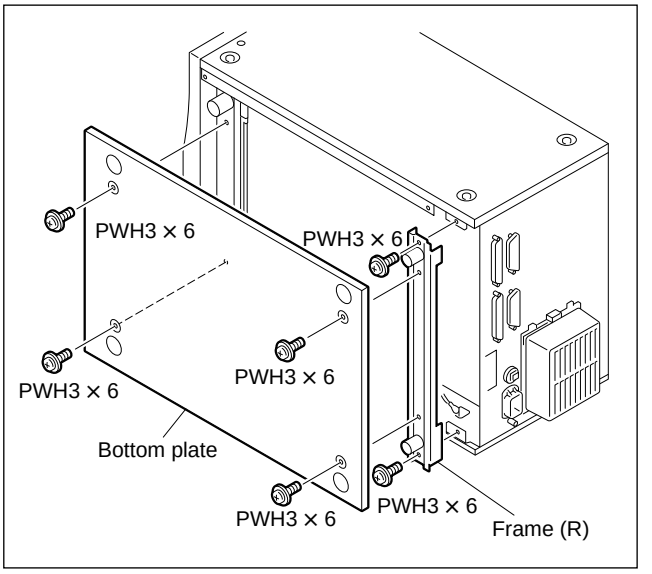
6. Disconnect the five connectors (CN1, CN2, CN4 and CN5), and remove the DR-327 board.



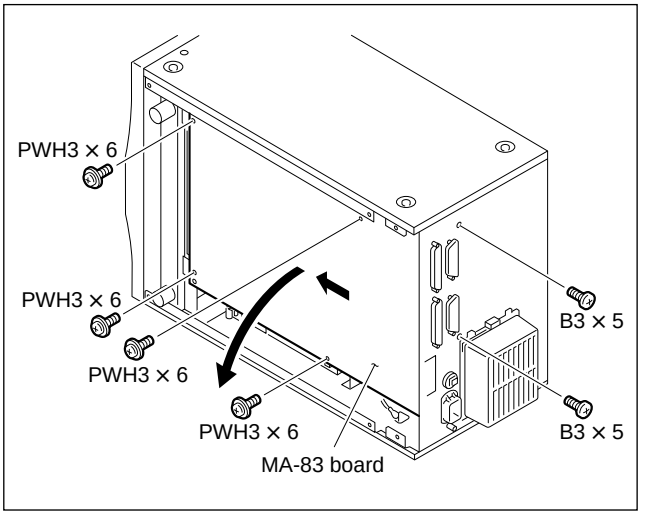
7. Install a DR-327 board in the main unit in the reverse order of removal.

1-8-3. MS-54 Board Replacement

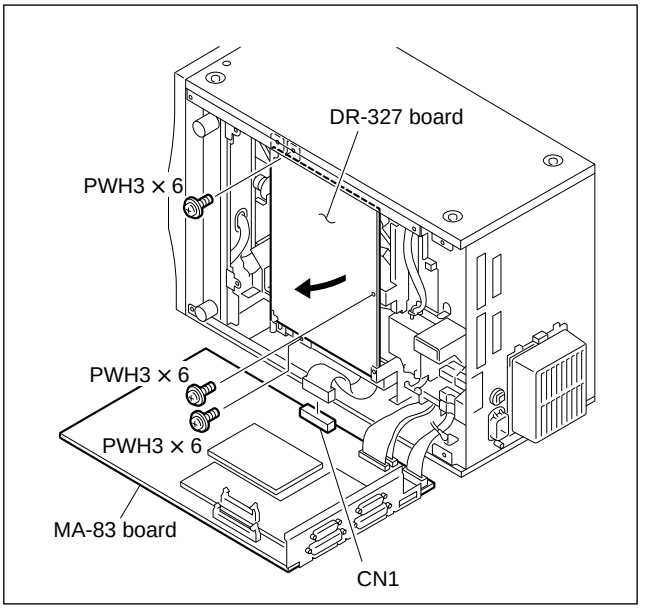
1. Turn off the power and remove the power cord.
2. Put the unit on its side down, remove the four screws (PWH3 × 6), then remove the bottom plate. (Refer to section 1-1-1.)
3. Remove the two screws (PWH3 × 6), then remove the frame(R).



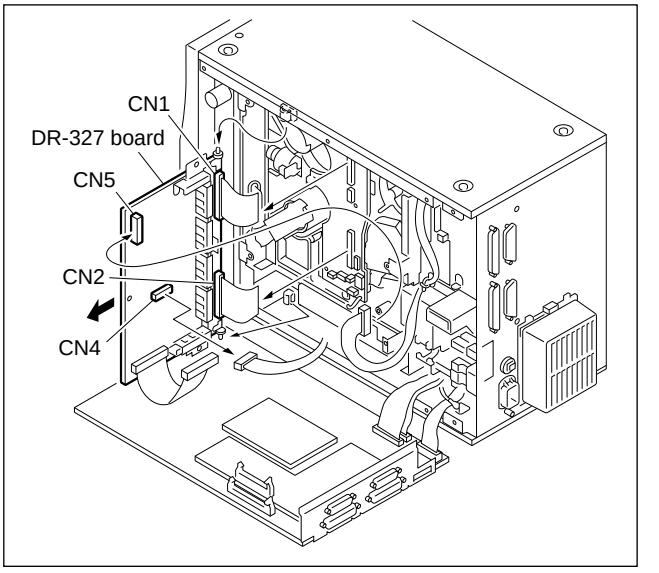
4. Remove the two screws (B3 × 5) and four screws (PWH3 × 6) and pull out the MA-83 board.
   At that time, slide the MA-83 board toward the front panel, then take out it in the direction indicated by the arrow.



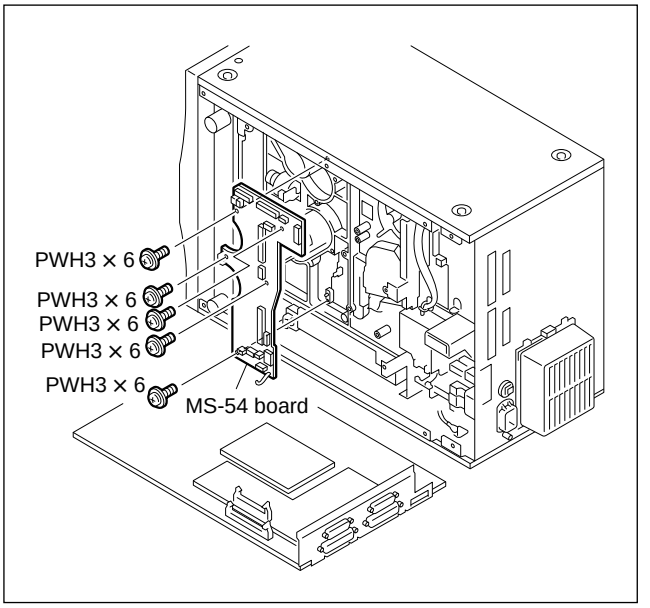
5. Remove the connector (CN1) on the MA-83 board. Remove the three screws (PWH3 × 6) .



6. Disconnect the five connectors (CN1, CN2, CN4 and CN5), and remove the DR-327 board.

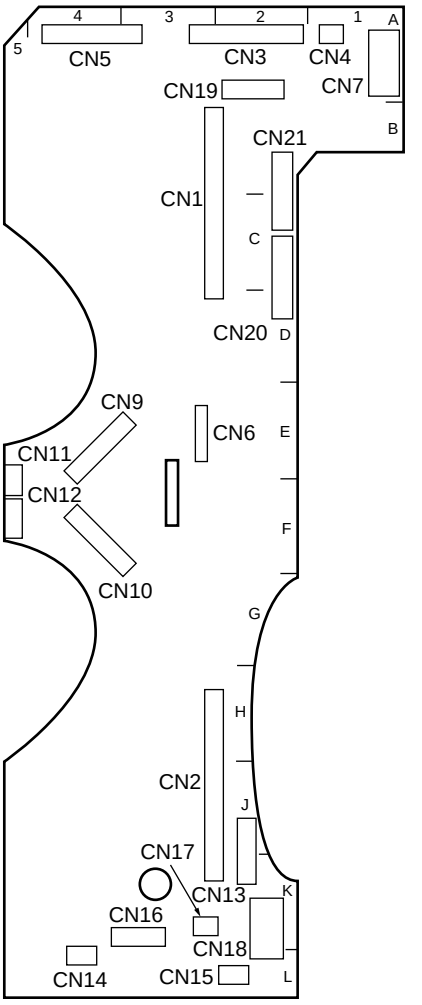


7. Remove the twenty connectors on the MS-54 board (CN1 to CN7, CN9 to CN21).
8. Remove the five screws (PWH3 × 6), then remove the MS-54 board.



9. Install a MS-54 board in the main unit in the reverse order of removal.

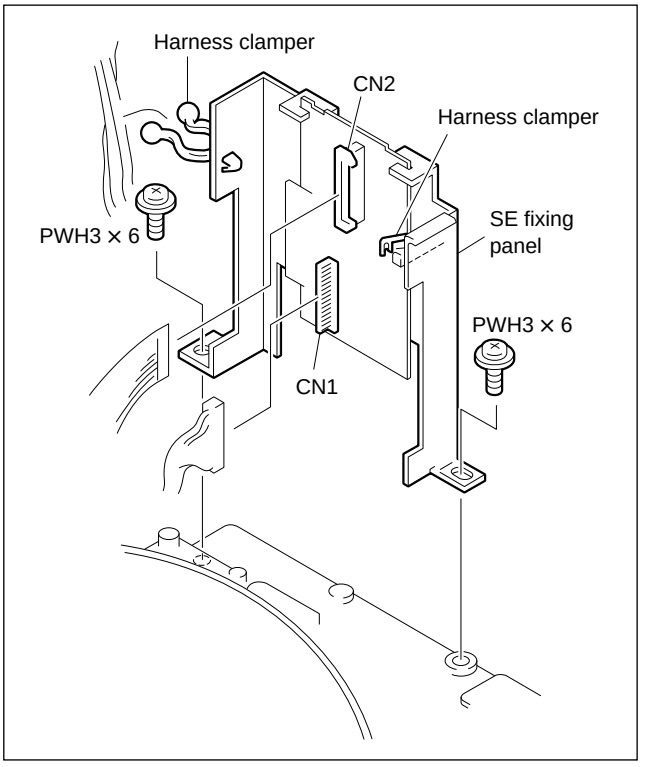
MS-54 Board



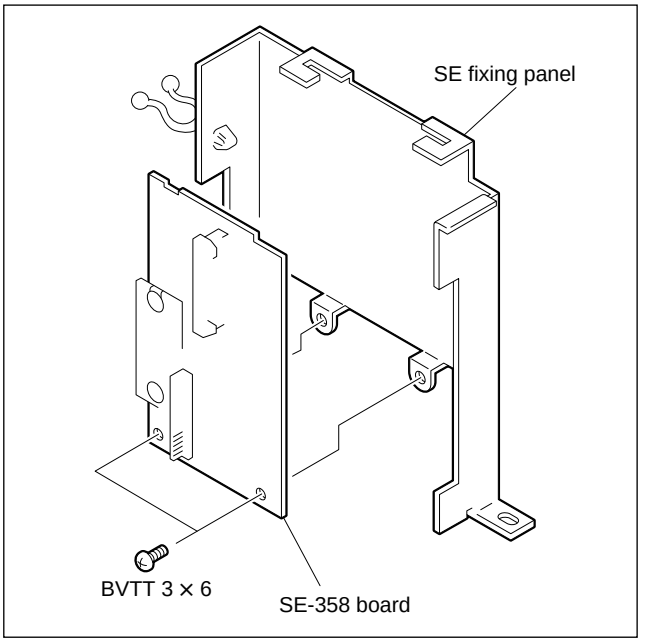
MS-54 BOARD (A SIDE)

1-8-4. SE-358 Board Replacement

1. Turn off the power and remove the power cord.
2. Remove the three screws (B4 × 5), then remove the upper lid. (Refer to section 1-1-1.)
3. Remove the harness clamper and two connectors (CN1 and CN2).
4. Remove the two screws (PWH3 × 6), then remove the SE fixing panel from the main unit.



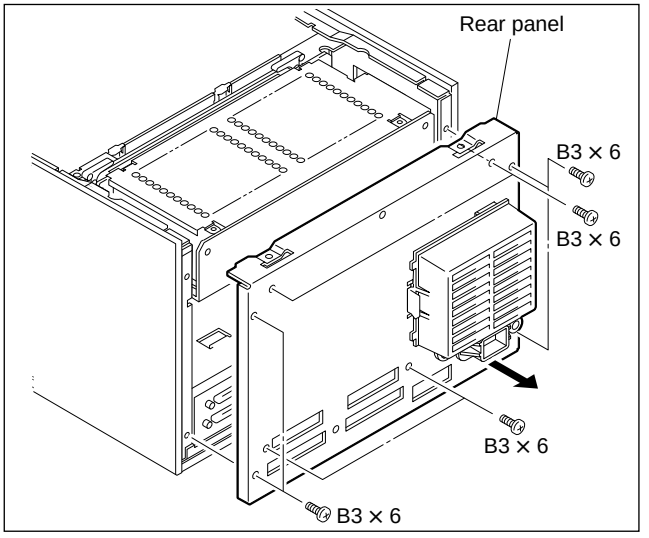
5. Remove the two screws (BVTT3 × 6), then remove the SE-358 board from the SE fixing panel.



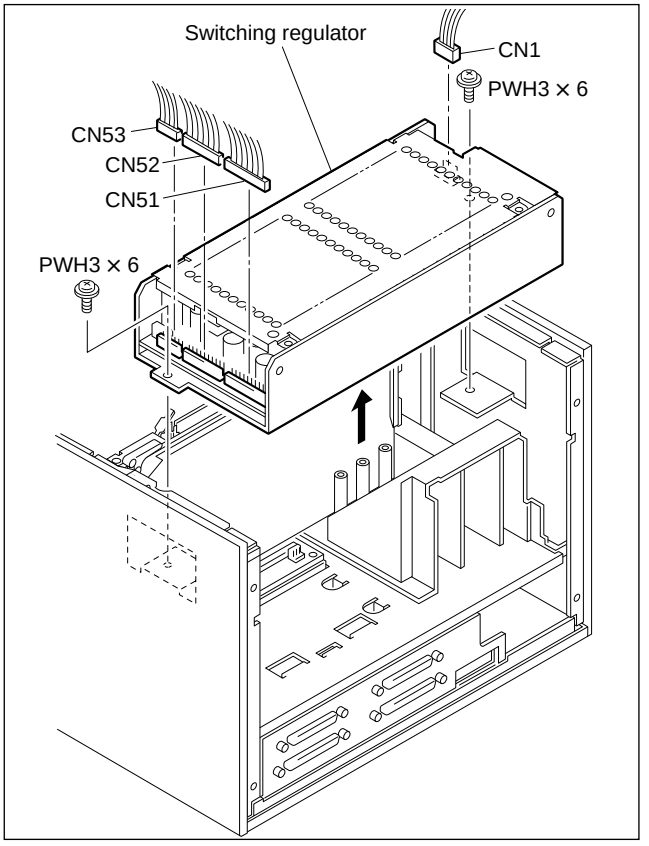
6. Install a SE-358 board in the main unit in the reverse order of removal.

1-8-5. EX-603 and EQ-66 Boards Replacement

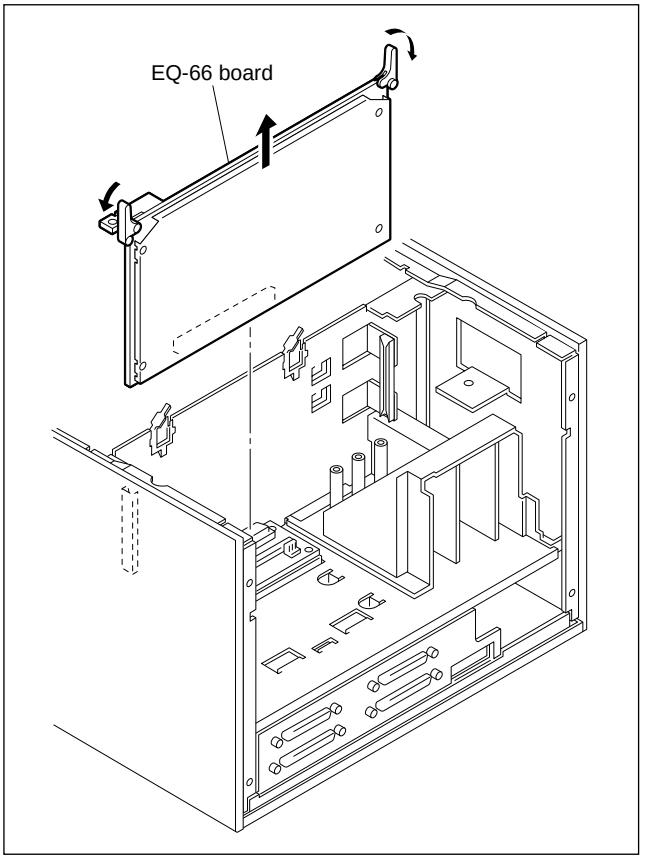
1. Turn off the power and remove the power cord.
2. Remove the three screws (B4 × 5), then remove the upper lid. (Refer to section 1-1-1.)
3. Remove the eight screws (B3 × 6), then remove the rear panel.



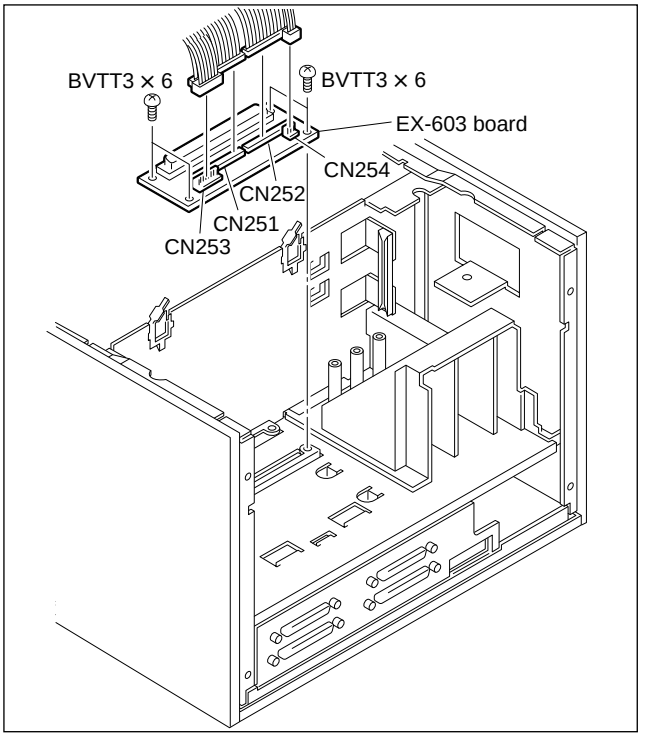
4. Disconnect the four connectors (CN1, CN51, CN52 and CN53) on the switching regulator.
5. Remove the two screws (PWH3 × 6), then remove the switching regulator from the main unit.



6. Remove the EQ-66 board.



7. Disconnect the four connectors (CN251 to CN254).
8. Remove the four screws (BVTT3 × 6).



9. Install each board in the main unit in the reverse order of removal.

1-9. LED Indicator Information on Board

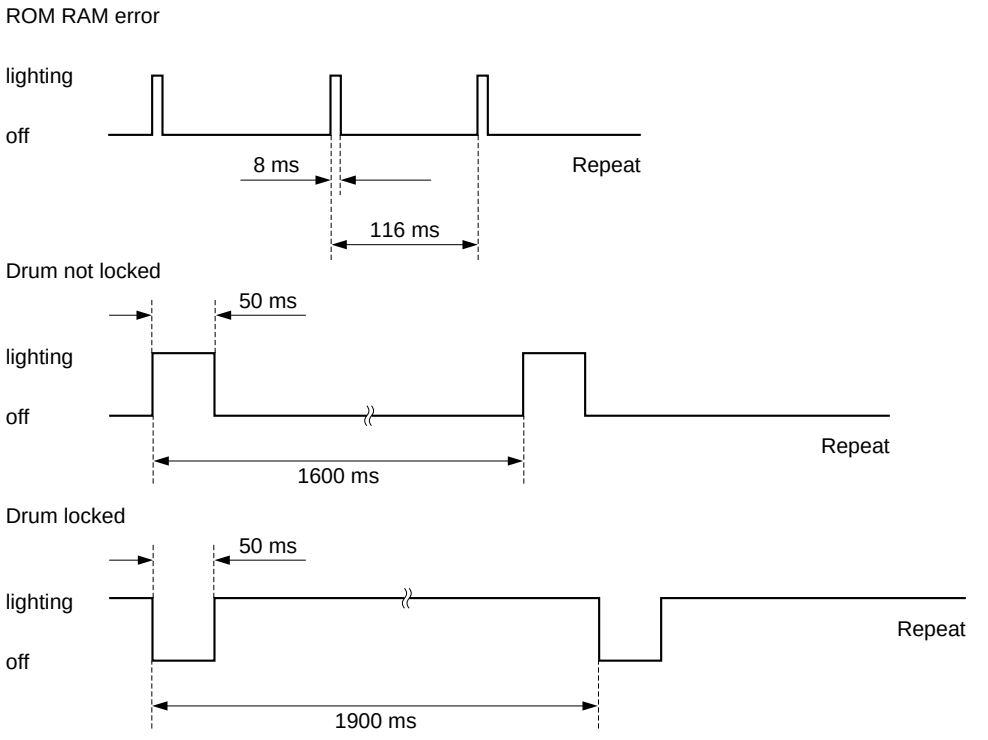
MA-83 board

LED No.	Color	Description
D401	Red	Lights when an A/C-channel sync pattern error occurs. (High in level.)
D402	Amber	Lights when an A/C-channel sync pattern error occurs. (Middle in level.)
D403	Amber	Lights when an A/C-channel sync pattern error occurs. (Middle in level.)
D404	Green	Lights when an A/C-channel sync pattern error occurs. (Low in level.)
D405	Green	Lights when an A/C-channel sync pattern error occurs. (Low in level.)
D406	Red	Lights when a B/D-channel sync pattern error occurs. (High in level.)
D407	Amber	Lights when a B/D-channel sync pattern error occurs. (Middle in level.)
D408	Amber	Lights when a B/D-channel sync pattern error occurs. (Middle in level.)
D409	Green	Lights when a B/D-channel sync pattern error occurs. (Low in level.)
D410	Green	Lights when a B/D-channel sync pattern error occurs. (Low in level.)
D411	Green	Lights when a C1 error occurs in channel A.
D412	Green	Lights when a C1 error occurs in channel B.
D413	Green	Lights when a C1 error occurs in channel C.
D414	Green	Lights when a C1 error occurs in channel D.
D415	Green	Lights when a C2 error occurs.

EQ-66 board

LED No.	Color	Description
D602	Amber	Indicates the status of the following by blinking pattern as shown in the drawings on the below. ・Read and write check of the ROM and RAM at power on. ・Drum servo check during nomal operation.

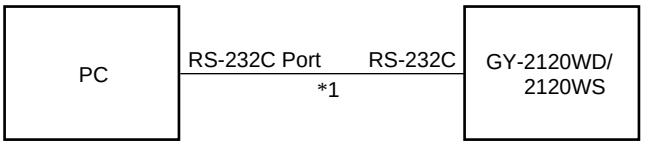
<Blinking pattern of D602 on EQ-66 board>



1-10. GY-2120 Control Software remo. exe

This software is used to perform the tape recording, playback, rewinding, fast-forward, and stop operations and cassette eject operation during adjustment of GY-2120WD/2120WS using an IBM PC/AT(note 1)-compatible machine (referred to as a PC hereafter).

1-10-1. Connection



*1: For the RS-232C cable that connects the GY-2120WD/2120WS and PC, refer to Section 1-4.

1-10-2. RS-232C Setting

1. Activate the terminal software using a PC.
   Communication baud rate: 9600 bps
   Character length: 8 bits
   Stop bit: 1
   Parity: None
2. Set setup switch 8 on the rear panel of the GY-2120WD/2120WS to OFF, then turn on the power of the GY-2120WD/2120WS.
3. Operate from the PC as described below.

   SERV(ENTER) ← Enter “SERV” from the PC.
   SERV=>21(ENTER) ← Enter menu No. 21.

   Serial Baud Rate (default 4)
   [0: 2400 bps/1: 4800 bps/2: 9600 bps/3: 19,200 bps/4: 38,400 bps] = 4 ← Current setting
   BAUD RATE=>0(ENTER) ← To set 2400 bps, enter “0”,

   SERV=>quit(ENTER) ← To terminate the system, enter “quit”.

   Exit SERVICE SET MODE

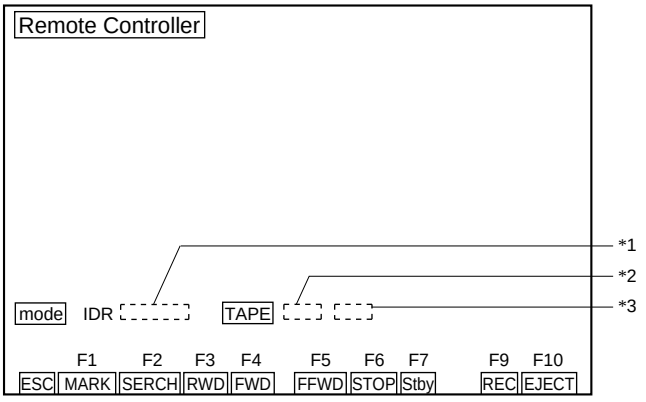
Note

After “0” is entered for the “BAUD RATE=>” prompt, do not turn off the power until the “SERV=>” prompt is displayed.

4. Turn off the power of the GY-2120WD/2120WS.
5. Terminate the terminal software of the PC.

1-10-3. Activation and Screen Display

1. Enter “remo” from the keyboard of a PC to activate the remo.exe software.
2. Set setup switch 8 on the rear panel of the GY-2120WD/2120WS to ON, then turn on the power of the GY-2120WD/2120WS.
3. The screnn below is displayed after approximately 30 seconds.



Operation display

*1 mode: Displays the IDR/IDC and read values.
*2 TAPE: Displays the winding state of the tape.
Beginning of tape → BOT
Intermediate position → No display
End of tape → EOT
*3: Displays the entry from the keyboard.

(Note 1) IBM PC AT is a registered trademark of IBM corporation

1-10-4. Command Description

[ESC] key (ESC): Terminates remo.exe.
[F1] key (MARK): Sets the ID of a mark point.
[F2] key (SERCH): Searches to the ID of a mark point.
[F3] key (RWD): Rewinds the tape. (A command is reversed during operation.)
[F4] key (FWD): Plays back the tape. (A command is reversed during operation.)
[F5] key (F FWD): Fast-forwards the tape. (A command is reversed during operation.)
[F6] key (STOP): Stops the tape. (A command is reversed during operation.)
[F7] key (Stby): Performs the standby operation. (A command is reversed during operation.)
[F8] key (TRC): Performs the tracking adjustment.
[F9] key (REC): Records the tape. (A command is reversed during operation.)
[F10] key (EJECT): Ejects the tape. (A command is reversed during operation.)

The commands below are entered from the keyboard of a PC.

S1 (ENTER): Plays back the tape at +1 time the normal speed.
S5 (ENTER): Plays back the tape at +5 times the normal speed.

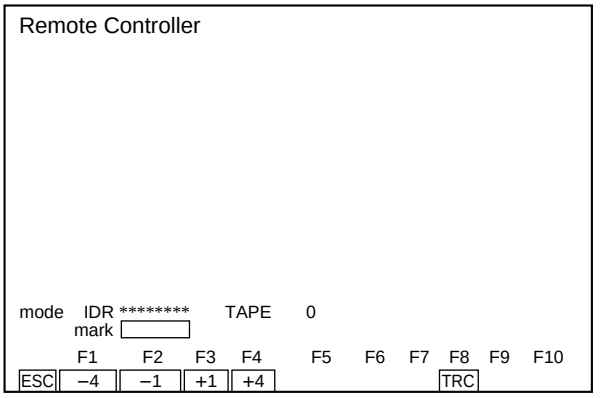
S-1 (ENTER): Plays back the tape at −1 time the normal speed.
S-5 (ENTER): Plays back the tape at −5 times the normal speed.

S-1 (ENTER): Plays back at normal speed in the reverse direction.
S-5 (ENTER): Plays back at five times the normal speed in the reverse direction.

1-10-5. Tracking Adjustment Mode

To enter the tracking adjustment mode, operate as described below.

1. Press the [F8] key (TRC) from the keyboard of a PC. (“00” is then displayed on the screen of the PC.)



2. Press the [F2] key (−1) and [F3] key (+1) from the keyboard of the PC to perform the tracking adjustment.
3. After adjustment is completed, press the [F2] and [F3] keys so that “00” is displayed on the screen of the PC.
4. Press the ENTER key.
5. Press the [F8] key from the keyboard of the PC. (The tracking adjustment mode is then terminated.)

1-10-6. Completion

1. Press the [ESC] key from the keyboard of a personal computer.
2. Turn off the power of the GY-2120WD and GY-2120-WS.

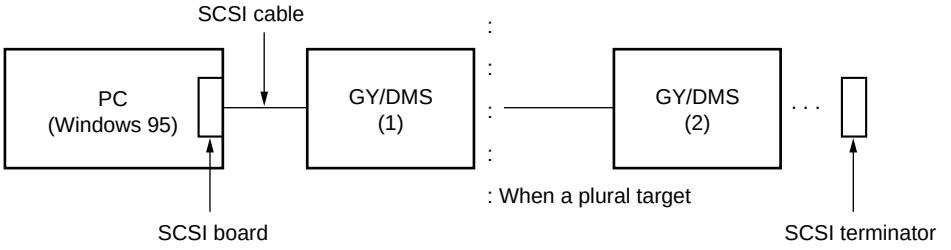
1-11. GY-2120 SCSI Control Software scsitool.exe

SCSI commands can be sent on Windows, to evaluate the functions of each target command.
This tool enables different models such as GY/DMS to be checked.
Functions of GY and DMS as a set can be checked.

1-11-1. Operating Environment

PC : IBM PC/AT compatible
OS : Windows 95
SCSI board : Adaptec AHA-2944UW (Ultra Wide differential) GY-2120WD
Adaptec AHA-2940UW (Ultra Wide Single-ended) GY-2120WS

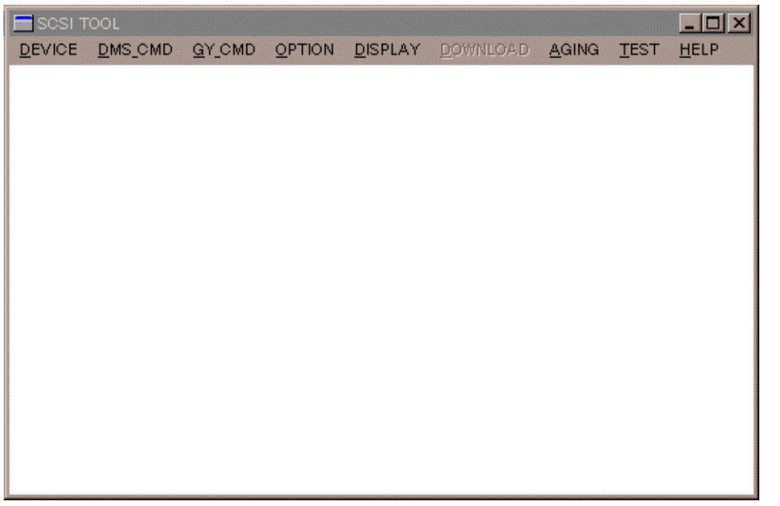
1-11-2. Connection



1-11-3. Functions

When SCSI TOOL is executed, the following menu will be displayed. The contents of which are as shown.
♦Refer to Fig. 1.

1) DEVICE
2) DMS_CMD
3) GY_CMD
4) OPTION
5) DISPLAY
6) DOWNLOAD
7) AGING
8) TEST
9) HELP

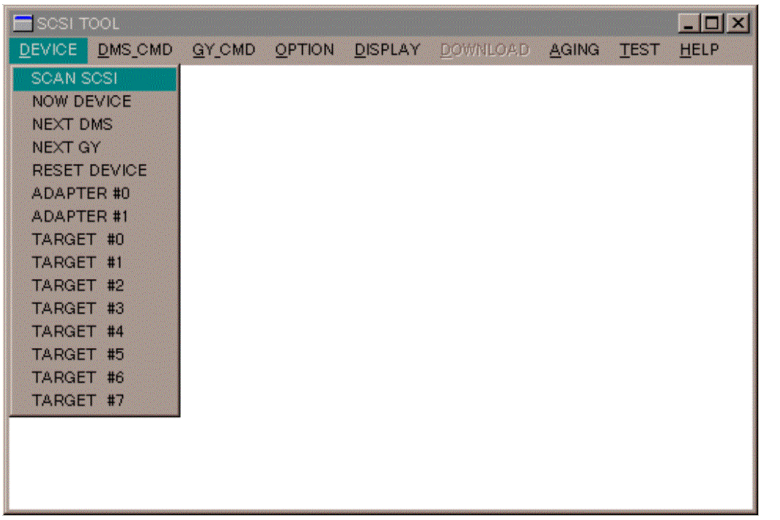


<Fig. 1> State when Tool is Started (Main Menu)

1) DEVICE ... Scan function of device
♦Refer to Fig. 2.

Indicates which device is connected to which ID. When several devices are connected, the device ID targeted can be changed.

How to use : Click the item to be selected with the mouse.



<Fig. 2> Scan Function Menu of Device

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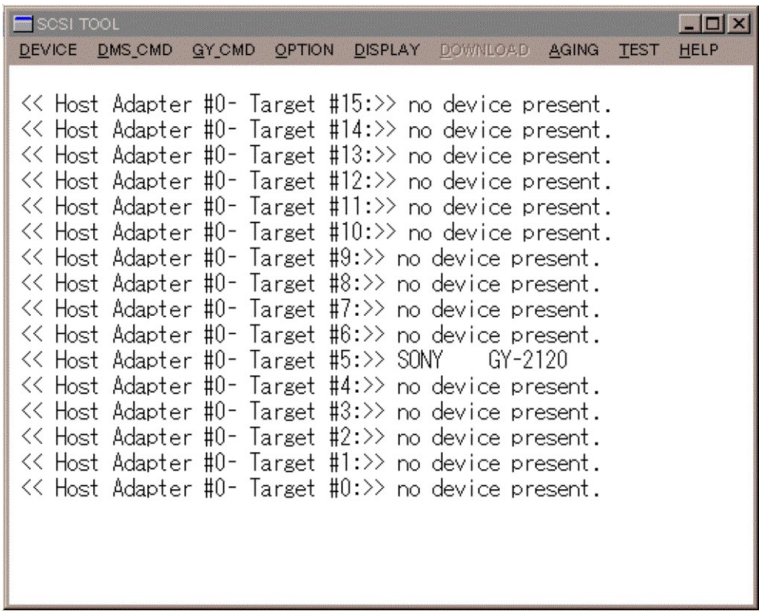
[Popup Menu]

- SCAN SCSI : Indicates the SCSI ID currently connected.

  By executing this menu, the SCSI ID connected to this tool will be acknowledged. If a device is connected, the name of the vendor and model will be displayed at the ID No. connected.

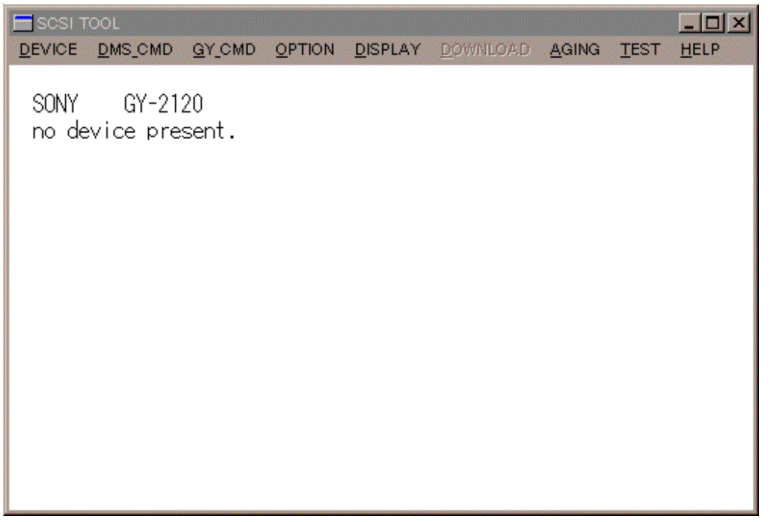
  ♦Refer to Fig. 3.



<Fig. 3> Screen When "SCAN SCSI" of the Popup Menu is Executed (GY-2120 is connected to ID = 5)

- NOW DEVICE : Displays the name of the vendor and model of the device acknowledged by the host currently for each GY/DMS.

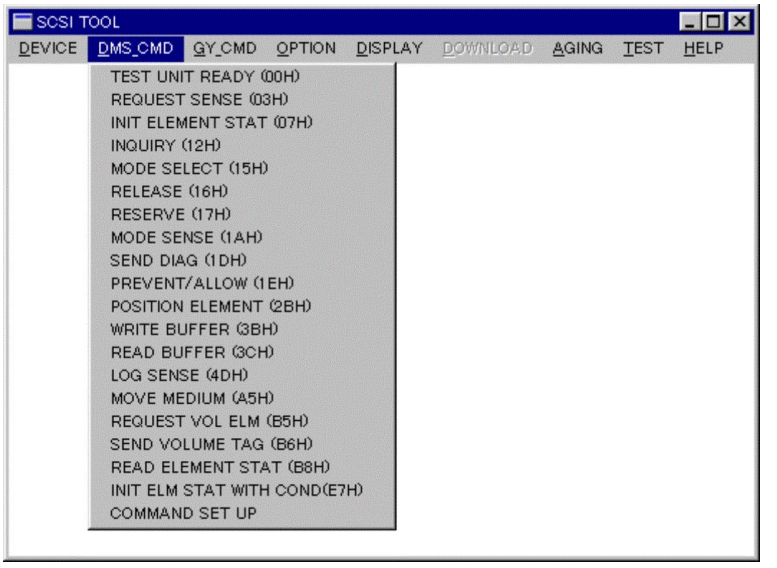
  ♦Refer to Fig. 4.



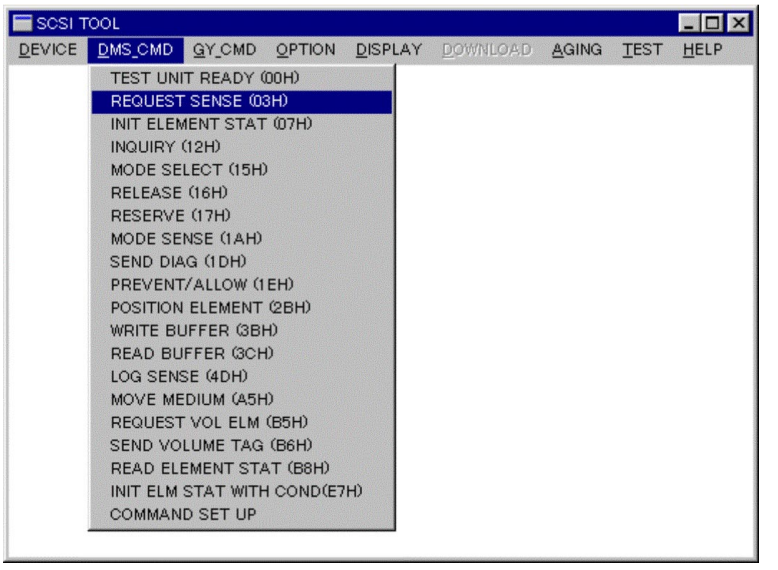
<Fig. 4> Screen When "NOW DEVICE" of the Popup Menu is Executed (DMS is not connected, and only GY-2120 is connected)

- NEXT DMS : If several DMSs are connected, the direct target will be the DMS connected to the DMS currently made the direct target by the host.
- NEXT GY : If several GYs are connected, the direct target will be the GY currently made the direct target by the host.
- RESET DEVICE : Resets the device. (∗ Not usable with this TOOL.)
- ADAPTER #0 : Set the adapter number to "0".
- ADAPTER #1 : Set the adapter number to "1".
- TARGET #0 to #7 : Set the SCSI ID of the target to "0" to "7".

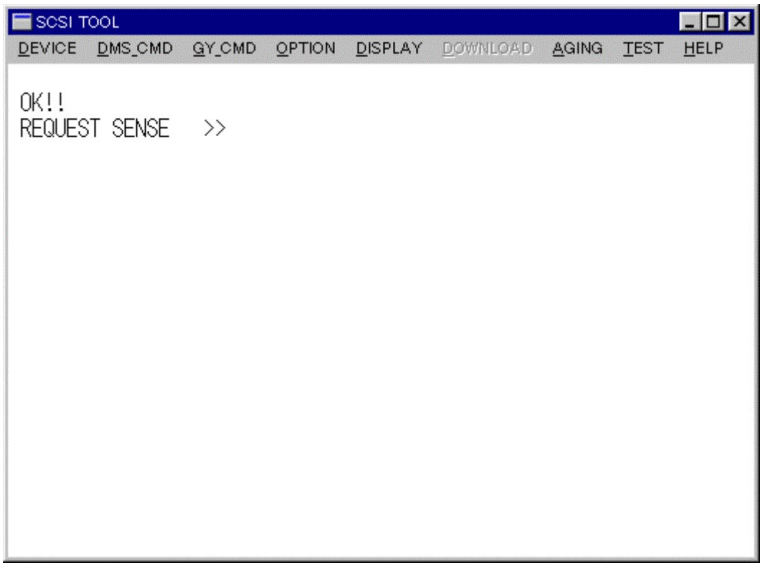
2) DMS_CMD ... Single command issue function for DMS
♦Refer to Fig. 5.



<Fig. 5-1> DMS Single Command Menu



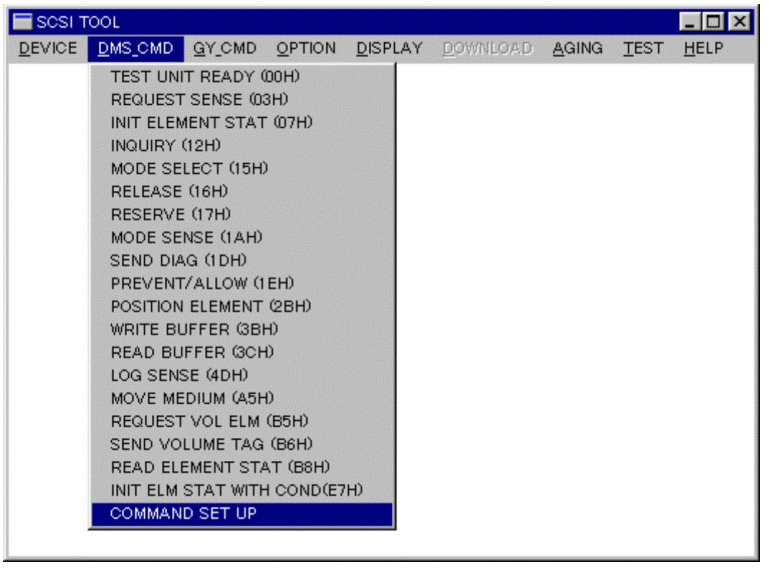
<Fig. 5-2> When "REQUEST SENSE (03H)" of the Popup Menu is Selected



<Fig. 5-3> Screen When "<Fig. 5-2>" is Executed

The SCSI command can be issued for DMS.
As parameters can also be set, command functions can be checked.
The parameters of each command can be specified at “COMMAND SET UP” of the popup menu.
♦Refer to Fig. 6.

How to use : Click the item to be selected using the mouse.
At the “COMMAND SET UP” dialog box, input the required items, and click the OK button with the mouse. Then click the commands to be sent.

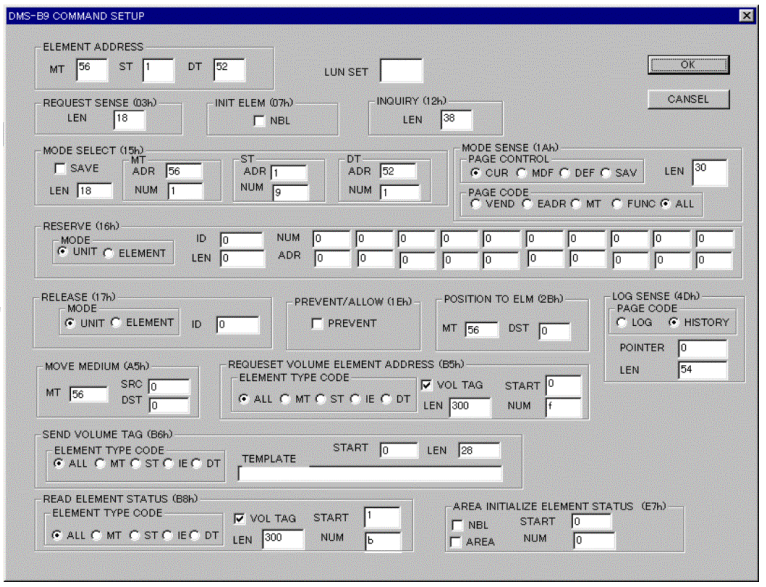


<Fig. 6-1> Setup Menu for DMS Single Commands

[Popup Menu]
- TEST UNIT READY
- REQUEST SENSE
- INIT ELEMENT STAT
- INQUIRY
- MODE SELECT
- RELEASE
- RESERVE
- MODE SENSE
- SEND DIAG
- PREVENT/ALLOW
- POSITION ELEMENT
- WRITE BUFFER
- READ BUFFER
- LOG SENSE
- MOVE MEDIUM
- REQUEST VOL ELM
- SEND VOLUME TAG
- READ ELEMENT STAT
- INIT ELM STAT WITH COND

SCSI command (For details of functions, refer to “PROTOCOL AND COMMAND SPECIFICATIONS 1st Edition (Revised 1) 9-967-719-02”.)

- COMMAND SET UP — Command parameter setting



<Fig. 6-2> Screen When “<Fig. 6-1>” is Executed (Single Command Setup Screen)

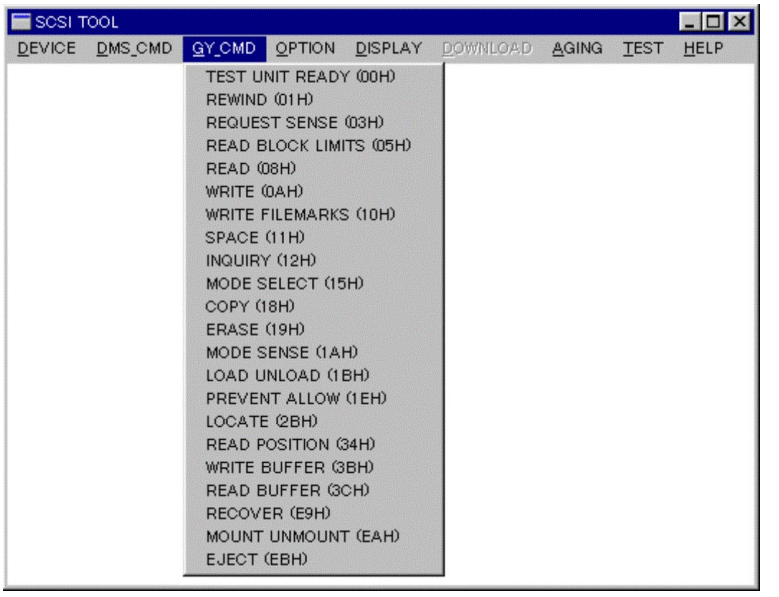
3) GY_CMD ... Single Command Issue Function for GY
♦Refer to Fig. 7.

The SCSI command can be issued for GY.
Set parameters at the “OPTION” menu.

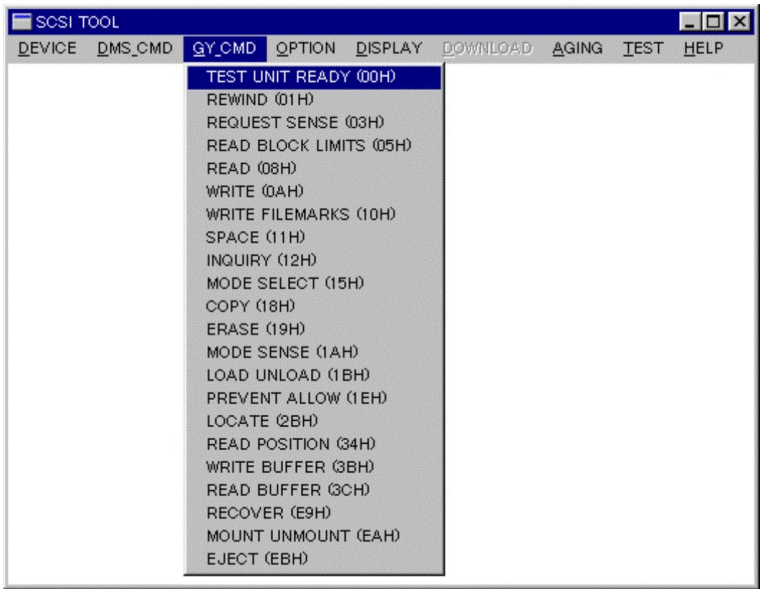
How to use : Click the item to be selected with the mouse.

[Popup Menu]
- TEST UNIT READY
- REWIND
- REQUEST SENSE
- READ BLOCK LIMITS
- READ
- WRITE
- WRITE FILEMARKS
- SPACE
- INQUIRY
- MODE SELECT
- COPY
- ERASE
- MODE SENSE
- LOAD UNLOAD
- PREVENT ALLOW
- LOCATE
- READ POSITION
- WRITE BUFFER
- READ BUFFER
- RECOVER
- MOUNT UNMOUNT
- EJECT

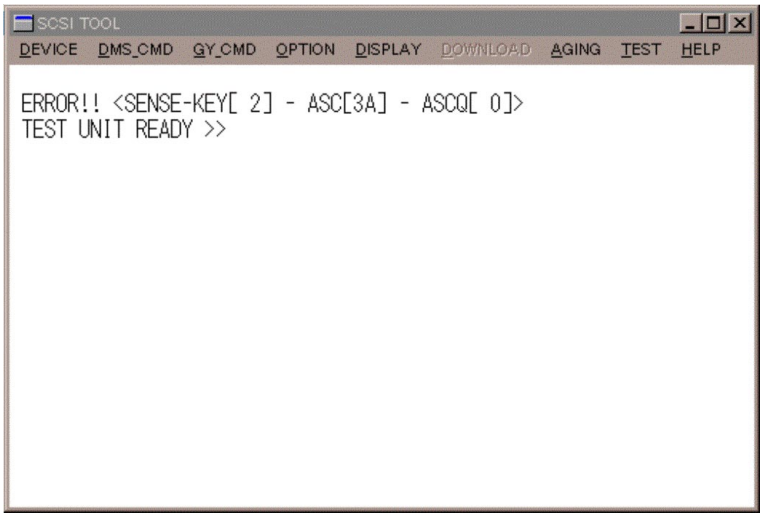
SCSI command (For details of functions, refer to “PROTOCOL AND COMMAND SPECIFICATIONS 1st Edition (Revised 1) 9-967-719-02”.)



<Fig. 7-1> GY Single Command Menu



<Fig. 7-2> When “TEST UNIT READY” (00H)” of the Popup Menu is Executed



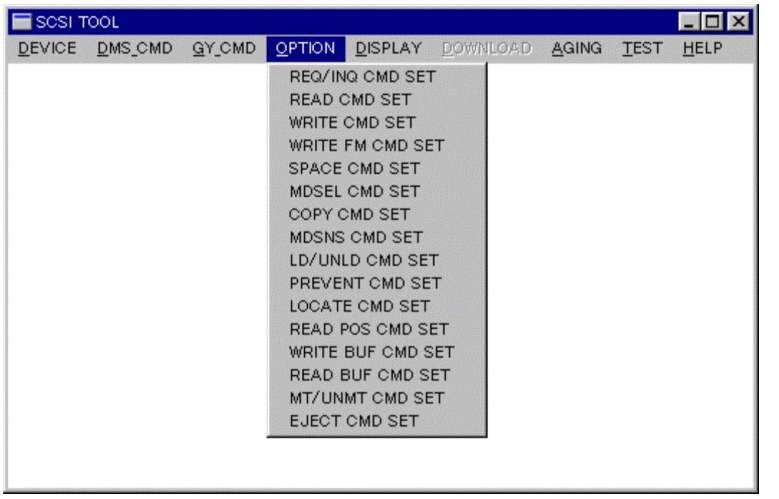
<Fig. 7-3> Screen When "<Fig. 7-2>" is Executed (Error)

<Fig. 7-4> Screen When "<Fig. 7-2>" is Executed (GOOD)

4) OPTION ... Function for Setting GY Command Parameter

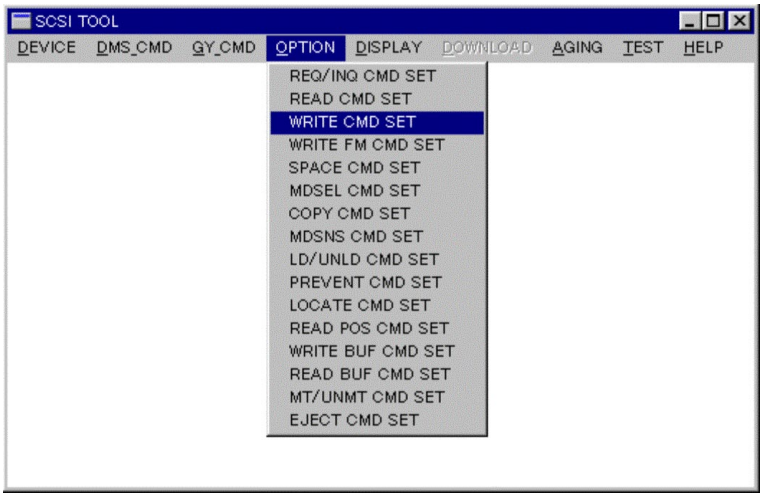
Data which need to be set by the command for GY can be set by command.
♦Refer to Fig. 8.

How to use : Click the item to be set using the mouse. The parameter setting dialog box will be displayed for each command. Input the values, and click the “OK” button. (Use as a set with the “3) GY_CMD”.)

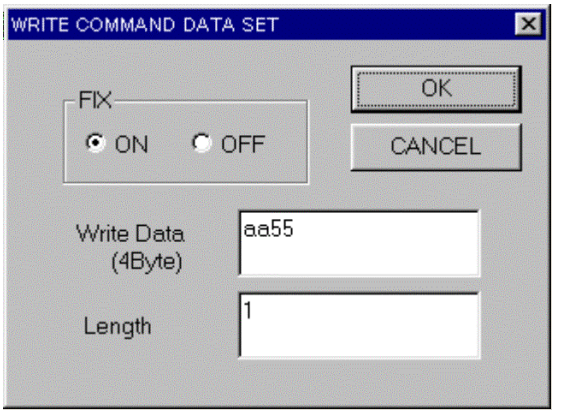


<Fig. 8-1> Setup Menu of GY Single Commands

[Popup Menu]
- REQ/INQ CMD SET — Setting of parameters of Request Sense and Inquiry
- READ CMD SET — Setting of parameters of Read command
- WRITE CMD SET — Setting of parameters of Write command
- WRITE FM CMD SET — Setting of parameters of Write Filemarks
- SPACE CMD SET — Setting of parameters of Space command
- MDSEL CMD SET — Setting of parameters of Mode Select command
- COPY CMD SET — Setting of parameters of Copy command
- MDSNS CMD SET — Setting of parameters of Mode Sense command
- LD/UNLD CMD SET — Setting of parameters of Load/Unload command
- PREVENT CMD SET — Setting of parameters of Prevent/Allow command
- LOCATE CMD SET — Setting of parameters of Locate command
- READ POS CMD SET — Setting of parameters of Read Position command
- WRITE BUF CMD SET — Setting of parameters of Write Buffer command
- READ BUF CMD SET — Setting of parameters of Read Buffer command
- MT/UNMT CMD SET — Setting of parameters of Mount/Unmount command
- EJECT CMD SET — Setting of parameters of Eject command



<Fig. 8-2> When "WRITE CMD SET" (Write command setup) of the Popup Menu is Selected

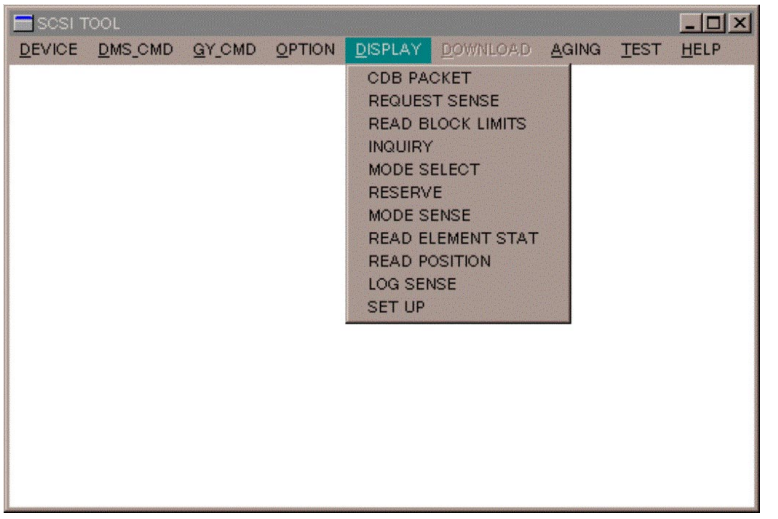


<Fig. 8-3> Dialog Box When "<Fig. 8-2>" is Executed

5) Display .... Display function

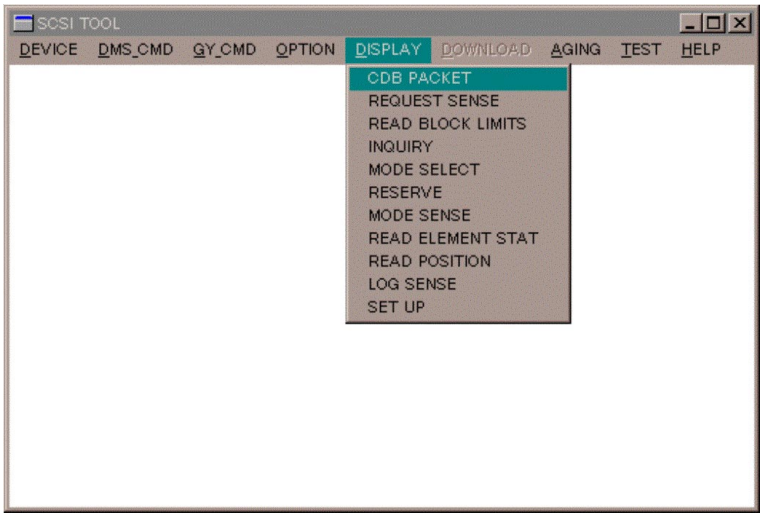
Sense commands such as Request Sense and commands with parameters such as Mode Select can be viewed anytime because the Sense data and parameters are stored on the program. Command packets just issued can also be viewed. The display format can be changed at “SETUP” of the popup menu.
♦Refer to Fig. 9-1.

How to use:Click the items to be selected with the mouse. The data of the item selected will be displayed.
Click “SETUP” of the popup menu, and when the desired format (“DUMP”/“ANALYSIS”) is selected, the dialog will be displayed. Click either one format and click the “OK” button.

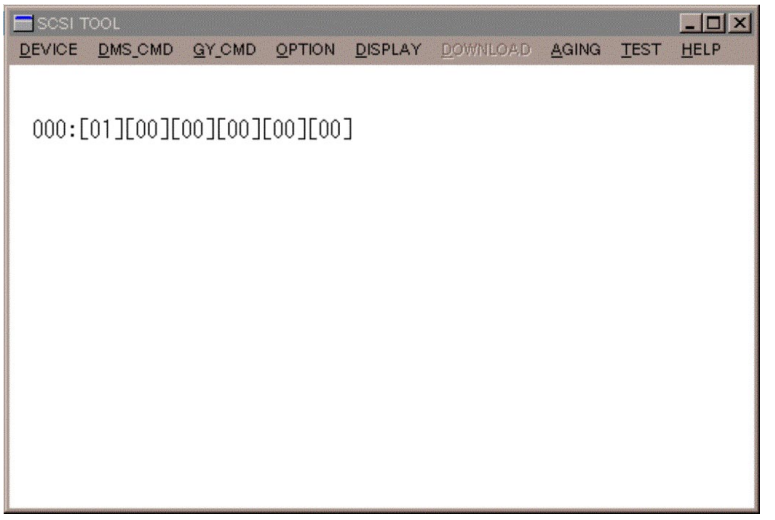


<Fig. 9-1> Display Function Menu

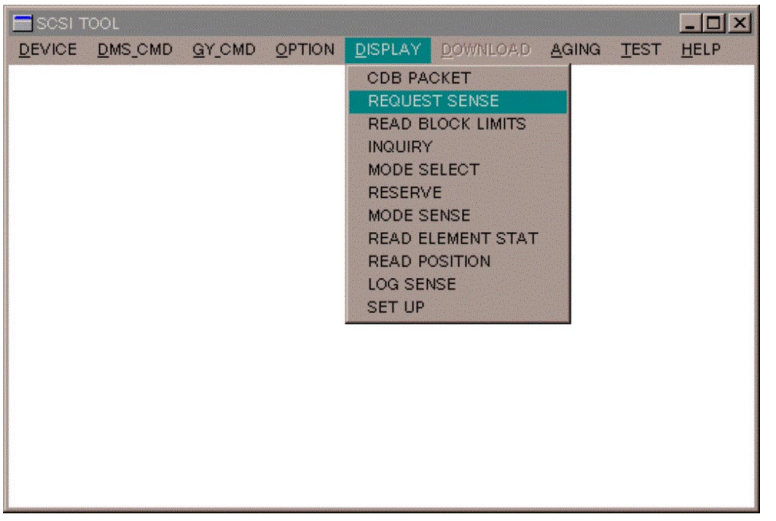
[Popup Menu]
- CDB PACKET — Displays the command packet just sent
- REQUEST SENSE — Displays the Request Sense data
- READ BLOCK LIMITS — Displays the Read Block Limits data
- INQUIRY — Displays the Inquiry data
- MODE SELECT — Displays the Mode Select data
- RESERVE — Displays the Reserve data
- MODE SENSE — Displays the Mode Sense data
- READ ELEMENT STAT — Displays the Read Element Status data
- READ POSITION — Displays the Read Position data
- LOG SENSE — Displays the Log Sense data
- SET UP — For setting the display format



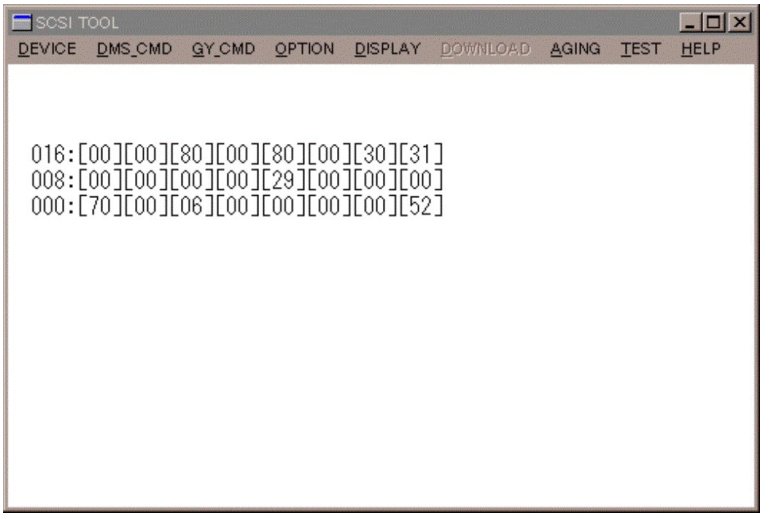
<Fig. 9-2> When "CDB PACKET" of the Popup Menu is Selected



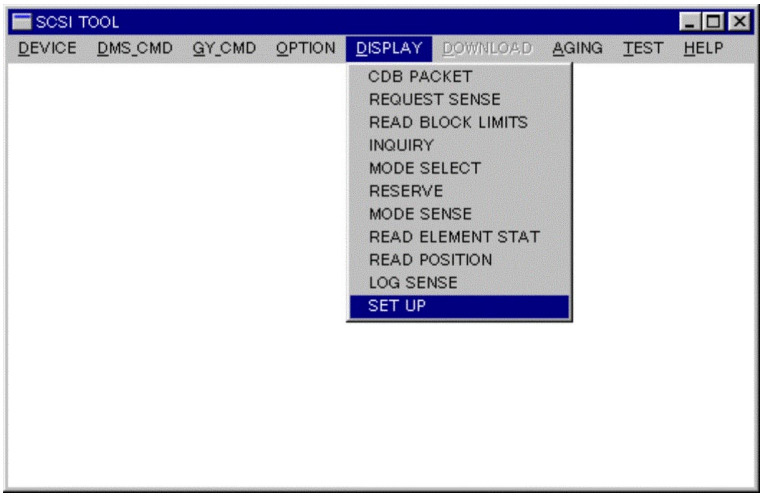
<Fig. 9-3> Screen When "<Fig. 9-2>" is Executed



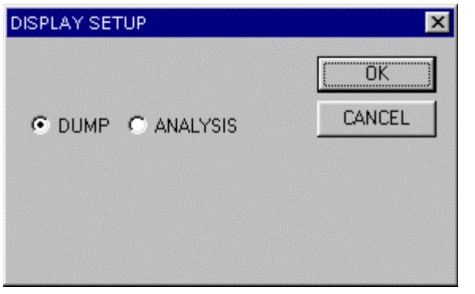
<Fig. 9-4> When "REQUEST SENSE" of the Popup Menu is Selected



<Fig. 9-5> Screen When "<Fig. 9-4>" is Executed



<Fig. 9-6> When "SET UP" of Popup Menu is Selected



<Fig. 9-7> Dialog Box When "<Fig. 9-6>" is Executed

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6) DOWNLOAD ... Download function

By specifying the file name and firmware type, file can be downloaded to the device connected

[Popup Menu]
• INPUT FILE : Specify the firmware type and file name.
∗ Firmware type 1. SCSI (SCSI CPU :GY10/GY2120)
2. DRIVE (DRIVE CPU :GY10)
3. SYSCON (SYSCON CPU :GY2120)
4. SERVO (SERVO CPU :GY2120)
5. IF (IF CPU :GY2120)
• START : Executes Download

7) AGING ... Program for checking service operations
∗ Refer to SCSI TOOL AGING commands

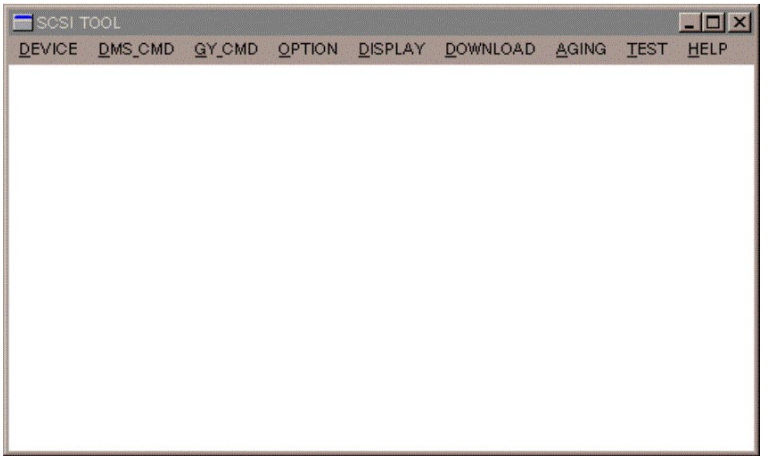
8) TEST ... Program for test
∗ Do not use

9) Help ... Displays the version of this tool
♦Refer to Fig. 10.

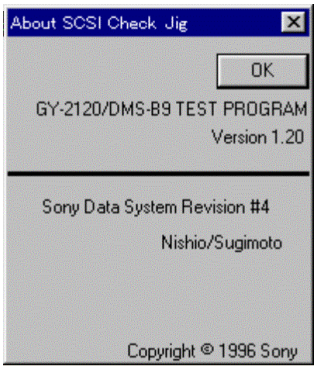
The current version of this tool can be known.

How to use : Click “About...” of the popup menu. The version dialog box will be displayed.

[Popup Menu]
• About... : SCSI TOOL version



<Fig. 10-1> Help Menu (Function which Displays the Tool Version)



<Fig. 10-2> Dialog Box When “<Fig. 10-1>” is Executed

1-11-4. Starting

1. Click the execution file “SCSITOOL.EXE” with the mouse.

2. As the SCSI_TOOL screen will start. Select the menu item “DEVICE” and click the popup menu “SCAN SCSI”.

3. Scan SCSI IDs 0 to 15, and acknowledge the currently connected SCSI ID. (The connected SCSI ID area displays information on the device.)

4. Execute the desired tests such as single commands, etc.

1-11-5. Ending

1. Click “☒” at the top right of the SCSI_TOOL screen, or click “▭”at the top left, select “Close” of the popup menu, and close the screen.

SCSITOOL-AGING Command

1. Purpose

Operates the unit continuously by each command, checks the state, and outputs the results.

2. Functions

Sets parameters and outputs log files.
(The AGING operation takes about 45 minutes at the default values.)

2-1. Parameter Settings

If parameters need to be set, click “SET PARAM” in fig. 1, and change the values in fig. 2 as desired.

2-1-1 Write Data

- Length : Transmission length (block number) of WRITE command.
  [Default] 1
- Block Size : Block size of “MODE SELECT” command.
  [Default] 1024

  Note) The product of the transmission length multiplied by the block size is 65,536 at maximum.
  Set the block size in units of 512.
- Repeat Write Count
  Set the number of times to issue the “WRITE” command.
  [Default] 100

2-1-2 Create Volume

- Vol.Unit Num : The number of volumes to be made on the tape.
  [Default] 5
- Volume Size : Capacity per volume.
  (Unit MB)
  [Default] 500 MB

  Note) The capacity per volume should be the same. Different values cannot be set.

2-1-3 Comp.Mode

Set whether to compress during writing or not.

- ON : Compresses the data.
- OFF : The data is not compressed.

  [Default] OFF

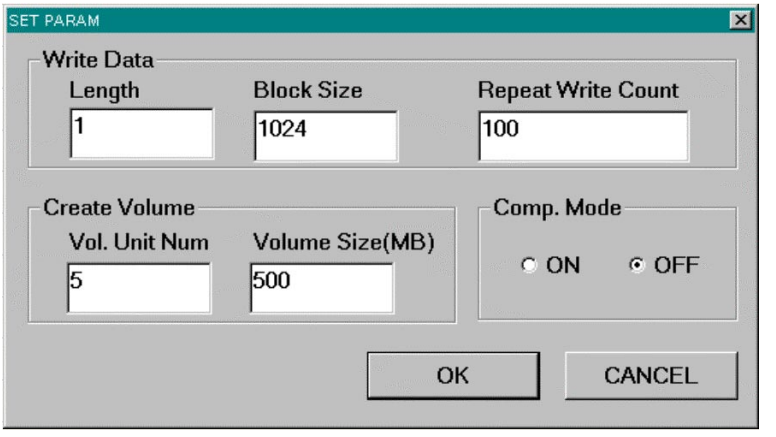


Fig. 1 Parameter Setting

2-2. Log File

In the log file, SCSI command and execution results for every operation are outputted.

The log file is stored in the folder with the “SCSITOOL” file.

The log file name set when the software is started is “0000.log”. Thereafter, each time”AGING” is executed, the name is set as 0001 → 0002 →...

2-2-1. Output Method

The output contents are as follows, as shown in Fig. 2.

- Date
- Start time
- Host adapter number
- Target ID
- Vendor name, model, version
- Parameter setting value
  Outputs the values of each parameter when executing aging.
- Executed SCSI command and results
  If the SCSI command name and results are OK, outputs “OK”.
  If bad, details are output.
- Bad spot number after writing/reading, etc.
  As the value of the bad spot number, etc., the value before starting writing/reading and value when writing/reading ended are outputted.
- Ending time

```
 ***== Aging Test ==***

Date :        10/28/97
Start Time :  18:01:15

<< Host Adapter >> :  # 0
<< Target ID >> :  # 6
<< Vendor/ Type/Ver.>> :  SONY      GY-10 1.00

<< PARAMETER >>
=== Length             === : 1
=== Block Size         === : 1024
=== Write Repeat Count  === : 3
=== Vol.Unit Num       === : 5
=== Volume Size (MB)   === : 1
=== Comp. Mode         === : OFF

      TEST UNIT READY  >> OK!!
      MODE SELECT      >> OK!!
      MOUNT/UNMOUNT    >> OK!!
      ERASE            >> OK!!
      MODE SELECT      >> OK!!
      POSITION TO ELM  >> OK!!
      MODE SENSE       >> OK!!Current Volume = 0
              Write Retry Block Num  (start) = 0
              Read Retry Block Num   (start) = 0
              Bad Spot Num           (start) = 0
              Read Retry Num         (start) = 0
      WRITE            >> 3
      WRITE FILEMARKS  >> 3
      REWIND           >> OK!!
      READ             >> 3
      VERIFY           >> 3
      SPACE            >> 3
      POSITION TO ELM  >> OK!!
      MODE SENSE       >> OK!!        Current Volume = 1
      WRITE            >> 3
      WRITE FILEMARKS  >> 3
      REWIND           >> OK!!
      MODE SENSE       >> OK!!        Current Volume = 1      VOLUME
position check OK !!
      LOAD/UNLOAD      >> OK!!
              Write Retry Block Num  (end) = 0
              Read Retry Block Num   (end) = 0
              Bad Spot Num           (end) = 0
              Read Retry Num         (end) = 0
Finish Time: 18:08:13
```

fig. 2 Log File

3. Operations

Describes the method of operating of this command

3-1. Preparations

Be sure to execute “SCAN SCSI” before executing this command.
(If already executed, there is not need to execute it again.)
To change the parameter, perform 2-1.
Any type of cassette can be used.
Load the cassette before starting aging.

3-2. Execution

To execute, click “START” in Fig. 3
Operates according to “3-3. Operation Sequence”

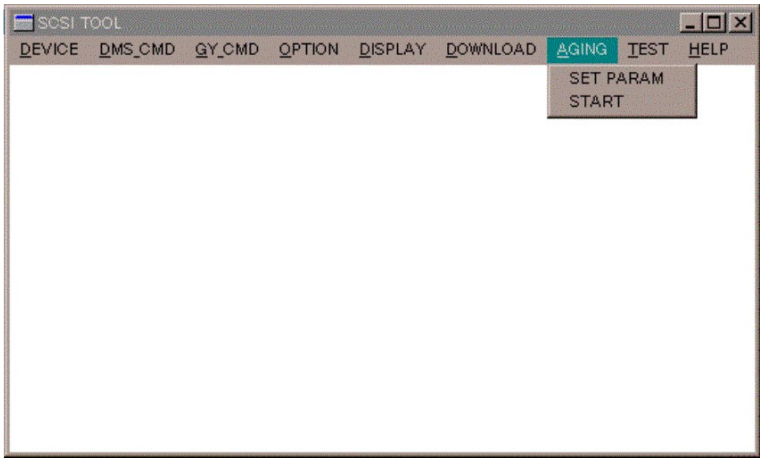
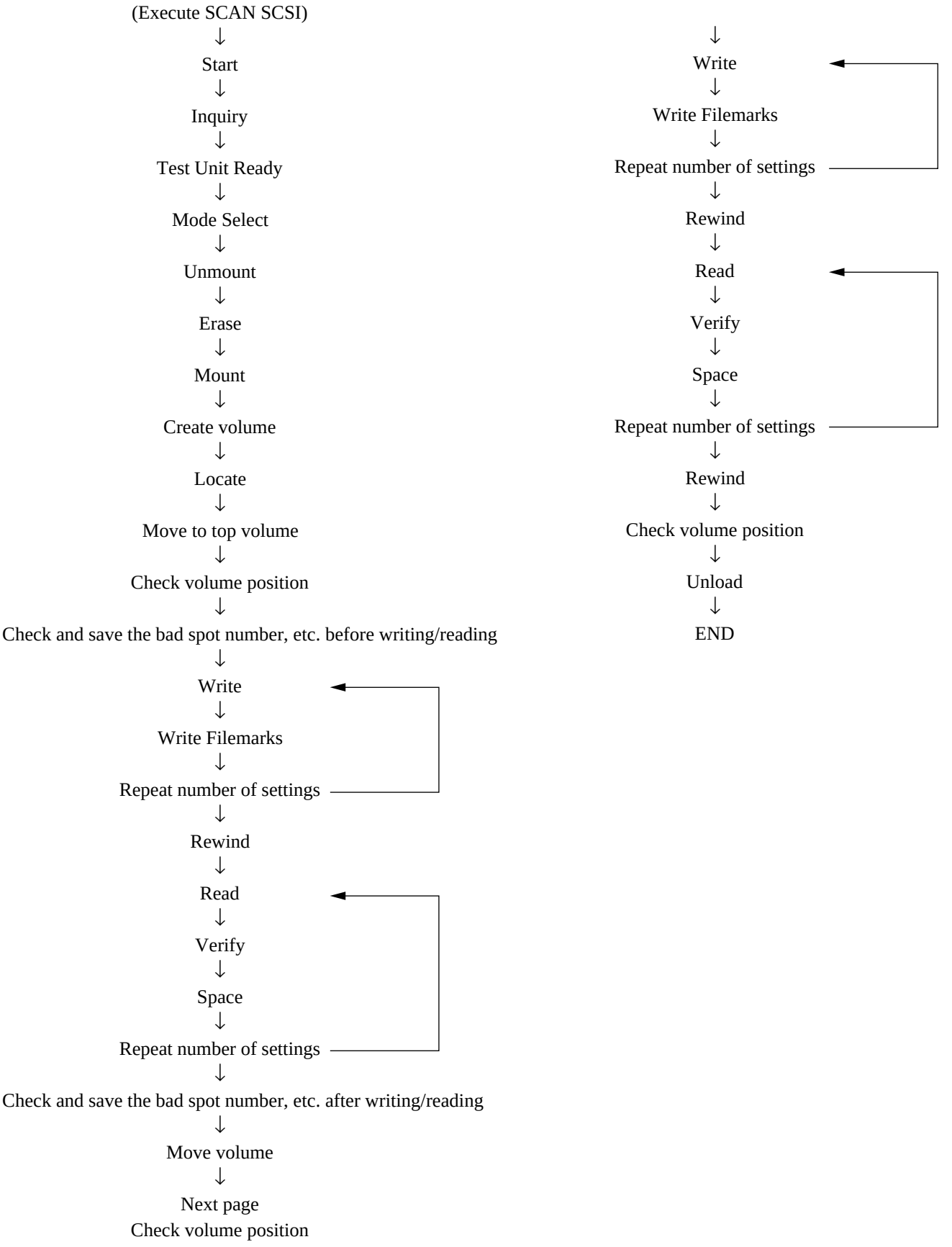


Fig. 3 Screen Selected

3-3. Operating Sequence



3-4. Process When Error Occurs

Describes the process when errors occur during operations.

3-4-1. When the following contents are output to the log file.

TEST UNIT READY >> ERROR!! <SENSE-KEY [2] - ASC [4] - ASCQ [1]>
TAPE LOADING
Wait until “Loaded” and execute START again.

3-4-2. When the ASPI error occurs

ASPI ERROR!! is output and the process is completed.
This occurs when the “Length” and “Block Size” values for parameter settings are not satisfied.

3-4-3. When the check condition occurs

The code and contents are output and the process is completed.
For details on the codes, refer to the protocol manual.

Example 1:

In this example, “EOM” occurs because the writable area on the tape is limited.
In this case, the process thereafter will be continued as an exceptional case.

WRITE >> ERROR!! <SENSE-KEY [0] - ASC [0] - ASCQ [0]>
EOM bit ON

Example 2:

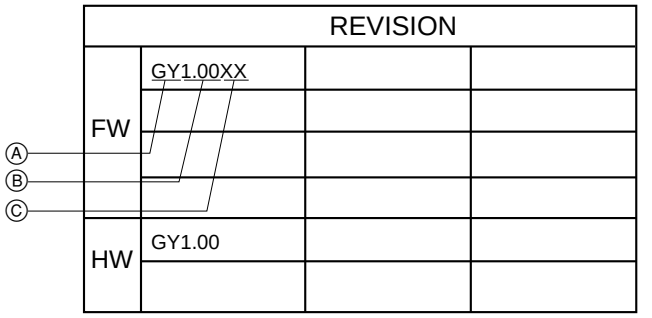
In this case, the details are output and the process is stopped.
WRITE >> ERROR!! <SENSE-KEY [5] - ASC [20] - ASCQ [00]>
INVALID COMMAND

1-12. Revision Label

Revision Label for Firmware/Hardware

The revision label affixed on the rear panel bears the version of the firmware and hardware of the unit.When the firmware or hardware is upgraded, write the revision number (the latest version number of the firmware/hardware) in the right column and cross the predecessor off the left column.

a) Revision Label



Meanings

FW: Firmware
HW: Hardware

Ⓐ Model Name
GY : GY-2120 series
DM : DMS-B9 series
Ⓑ Revision No. of the Firmware/Hardware
(Total version number of the unit)
Initial Version : 1.00
Ⓒ Firmware Destination
XX : XX-Capable model
-P : Patch Version

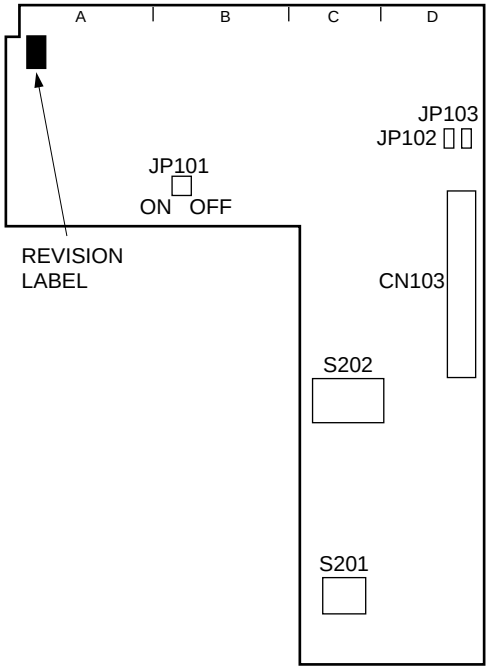
b) Revision Label for Board

The revision labels for boards affixed on the boards bears the software version.The affixed revision label will be changed Rev. A → Rev. B → Rev. C by upgrading the software.

(Revision Label affixed on the Board)

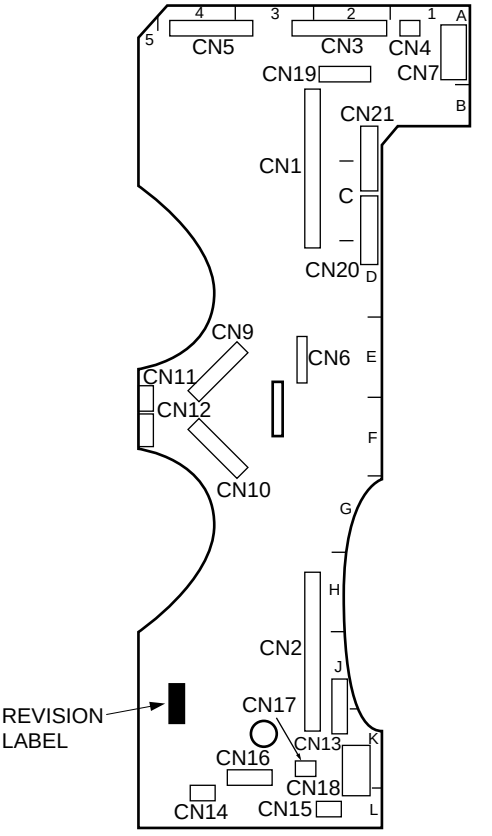
The position of the revision label on the board in GY-2120 is shown below.

IF-682/683 Board



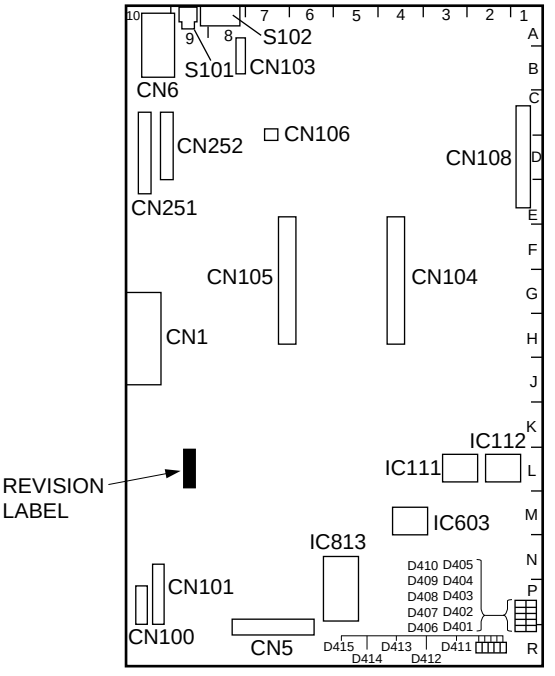
IF-682/683 BOARD (A SIDE)

MS-54 Board



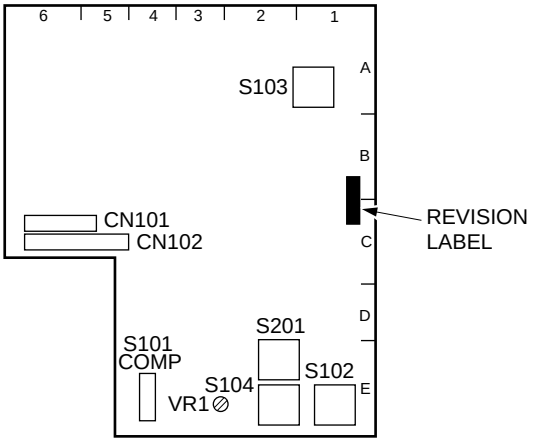
MS-54 BOARD (A SIDE)

MA-83 Board



MA-83 BOARD (A SIDE)

DSP-78 Board



DSP-78 BOARD (A SIDE)

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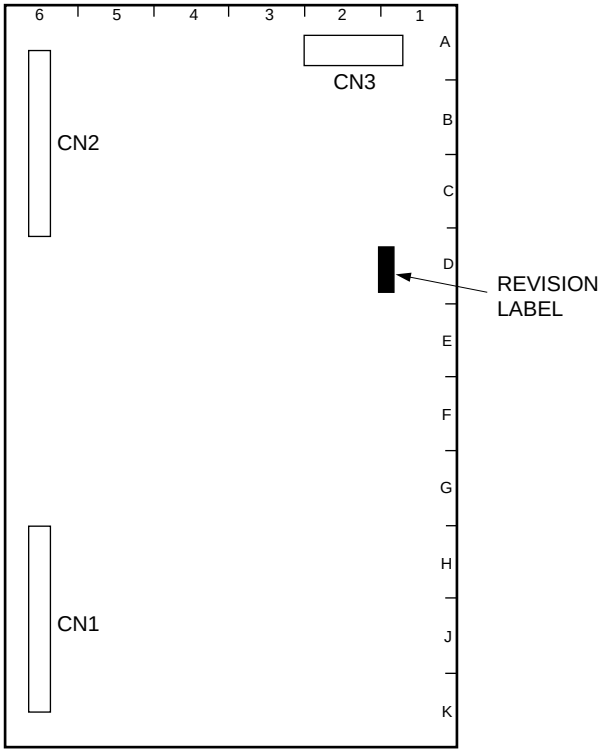
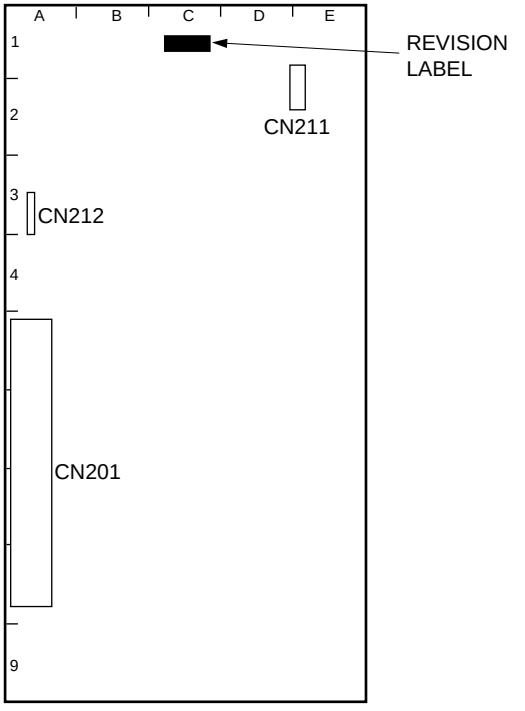
DR-327 Board



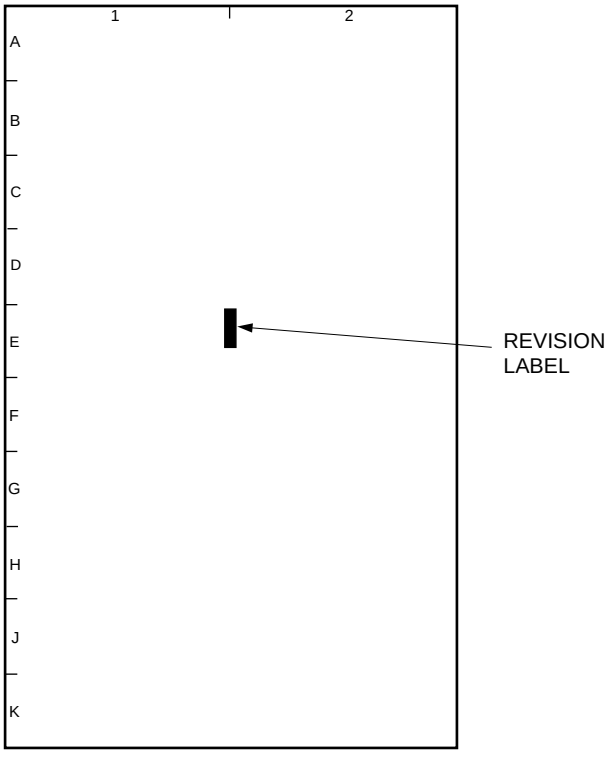
DR-327 BOARD (A SIDE)

EQ-66 Board



EQ-66 BOARD (A SIDE)

MEM-83 Board



MEM-83 BOARD (B SIDE)

1-13. Download by Special Tool

When the version of firmwares are upgraded, floppy disks containing the download tool FDL2120 file for GY-2120 are distributed to the Sony service centers.
The FDL2120 can download four firmwares incorporated in this unit.
Perform download according to the following procedure.

Operating environment
PC : IBM PC/AT compatible machines
OS : MS-DOS

Preparations

1. Copy the following files to the hard disk of the PC from the floppy disk.
   - SCSI ROM file
   - SYSCON ROM file
   - SERVO ROM file
   - IF ROM file
   - FDL2120.EXE

Connection and Setting the GY-2120 RS-232C Baud Rate

1. Connect the COM1 connector of the PC and RS-232C connector of the GY-2120 rear panel using the RS-232C cable.

2. Start the terminal software on the PC
   Set the RS-232C port of the PC as follows.

Setting	Setting Value
Serial Port	COM 1 connector at PC side
Baud Rate	9600bps
Parity	None
Flow control	None
Stop Bit Length	1 bit
Data Width Length	8 bits

3. Turn OFF SET UP switch 8 of the GY-2120 rear panel.

4. Turn ON the power of GY-2120.

5. Check that the initial screen is displayed on the PC terminal, and “<System Initialize End>” is displayed finally.

6. Check that “No Tape” is displayed on the GY-2120 LCD.

7. Enter “SERV” from the PC keyboard, and check that the “SERV => ” prompt is displayed.

8. Enter “21” for the “SERV => ” prompt, and press the ENTER key.

9. Check that the following messages are displayed.

   Serial Baud Rate (default 4)
   [0:2400 bps/1:4800 bps/2:9600 bps/3:19200 bps/4:38400 bps] = 4
   BAUD RATE => 4

9. Enter “4” for the “BAUD RATE => ” prompt, and press the ENTER key.
   Check that after about 3 seconds, the “SERV => ” prompt is displayed again.

10. Enter “quit” for the prompt, and press the ENTER key.
    Check that the message “Exit SERVICE SET MODE” is displayed.

11. Turn OFF the GY-2120 power.

Changing the PC Side RS-232C Baud Rate

1. Set the RS-232C port of the PC as follows again.

Setting	Setting Value
Serial Port	COM 1 connector at PC side
Baud rate	38400bps
Parity	None
Flow control	None
Stop Bit Length	1 bit
Data Width Length	8 bits

Downloading the Firmware

1. Turn ON SET UP switch 8 of the GY-2120 rear panel.

2. Turn ON the power of GY-2120.

3. Check that “<System Initialize End>” is displayed on the PC.

4. End the PC terminal software.

5. Enter “fdl2120 384” at the prompt (“C:¥>”, etc.), and press the ENTER key. Start the download tool.

   Example:
   C:¥> fdl2120 384 ⏎

6. As “Menu No? : ” will be displayed at the PC, enter the number of the firmware to be downloaded, and press the ENTER key.
   1 : SCSI ROM firmware
   2 : SYSCON ROM firmware
   3 : SERVO ROM firmware
   4 : IF ROM firmware

   Example : When downloading the SCSI ROM firmware
   Menu No? : 1 ⏎

7. As “Enter File Name:” will be displayed at the PC, Enter the file name of the firmware, and press the ENTER key.

   Example : Input File Name : scsi 120. mot ⏎

   Note

   If a wrong file name is entered, “Can’t Open File (input file name)” will be displayed at the PC and the download tool will end. Repeat from step 5.

8. As “Write OK? (y/n):” will be displayed at the PC, if the Menu No. and file name input are correct, enter “y”. To enter a new Menu No. and file name, enter “n”.

   Example:
   If the current input are correct
   Write OK?(y/n) : y ↵
   To enter again
   Write OK?(y/n) : n ↵

   When “y” is entered, download will start immediately. When “n” is entered, the prompt will be displayed again. Repeat from step 5.

9. The following are displayed on the PC, and download starts.

   Open File Length : XXXXXX byte ∗ XXXXXX is the file size of the file
   Start>> being download

10. Check that the following are displayed on the GY-2120 front panel.

Firmware	Display	Required time to end (When Baud Rate:38400 bps)
SCSI	DownLoad SC CPU	Approx. 6 minutes
SYSCON	DownLoad SYS CPU	Approx. 7 minutes
SERVO	DownLoad SV CPU	Approx. 3 minutes
IF	DownLoad IF CPU	Approx. 2 minutes

   Note

   Even if the following are displayed on the PC, writing to the ROM will not have completed.

   Start >> ∗∗ >> Finish. (Send Data Cnt : XXXXXX byte)

   If the power of GY-2120 is turned off during writing, the ROM data may be damaged in some cases, which will require the ROM to be replaced.

11. Wait until “No Tape” is displayed on the front panel of GY-2120.

Check After Downloading

1. Start the terminal software from the PC.
   Set the RS-232C port of the PC as follows.

Setting	Setting Value
Serial Port	COM 1 connector at PC side
Baud rate	38400 bps
Parity	None
Flow control	None
Stop Bit Length	1 bit
Data Width Length	8 bits

2. Enter “ROM” from the PC keyboard, and check the version of the downloaded firmware.

   *** ROM VERSION DISPLAY ***

[FW Rev]	XXX. XX	(Example)	[FW Rev]	GY1.00
[SCSI]	X. XX		[SCSI]	1.10
[SYS]	X. XX		[SYS]	1.05
[IF]	X. XX		[IF]	1.05
[SV]	X. XX		[SV]	1.05
[EQ]	X. XX		[EQ]	1.30
[DR]	X. XX		[DR]	1.00

3. To download a different firmware, execute from step 4 “Downloading Firmware”.

4. Turn OFF the power of GY-2120.

5. Disconnect the RS-232C cable of GY-2120.

6. Turn OFF the SET UP switch No. 8 of the GY-2120 rear panel.

7. End

Section 2
Periodic Maintenance and Inspection

2-1. Cleaning

To make the most of the functions, fully realize the performance of this unit, and to lengthen the life of the unit and tape, clean the components often.

2-1-1. General Information for Cleaning

1. Cautions

- Turn the power off before cleaning.
- Each block in the mechanical deck consists of a precision part and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Do not touch the greased portions during cleaning. If grease attaches to a cleaning cloth, replace the cleaning cloth by new one. If a cleaning cloth smeared with grease is used, grease may attach to the places where it should not.
- Do not insert a cassette tape before a cleaning fluid completely evaporates after cleaning.

2. Preparation

(1) Turn the power off.
(2) Remove the upper lid. (Refer to Section 1-1-1.)
(3) Remove the plate MD. (Refer to Section 1-1-1.)
(4) Remove the cassette compartment. (Refer to Section 1-1-2.)

2-1-2. Rotary Heads Cleaning

CAUTION

The rotary heads are the part that can be damaged easily. Be careful not to damage the rotary heads during cleaning.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

CAUTION

Do not use a cotton swab to clean the rotary heads.

Procedures

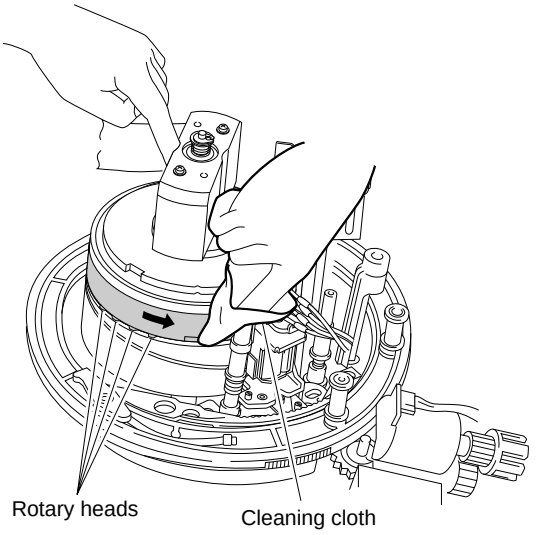
1. Hold the cleaning cloth moistened with cleaning fluid keeping it from becoming wrinkled. And press the cleaning cloth slightly against the rotary heads.

2. Rotate the upper drum slowly counterclockwise two or three turns and clean the rotary heads with the cleaning cloth held.

   CAUTION

   Be sure to rotate the upper drum counterclockwise and clean the rotary heads along the circumference. Do not rotate the upper drum in the direction opposite to the specified direction (clockwise) or clean it in the vertical direction. This may damage the rotary heads and the brush/slipring assembly.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Rotary Heads Cleaning

2-1-3. Lower Drum's Tape Running Surface and Lead Surface Cleaning

CAUTION

Be careful not to damage the lower drum (specially lead surface) during cleaning. Pay careful attention when cleaning the edge portion above the lower drum because it is located near the rotary heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Skewer or an equivalent (A metallic skewer cannot be used.)

Procedures

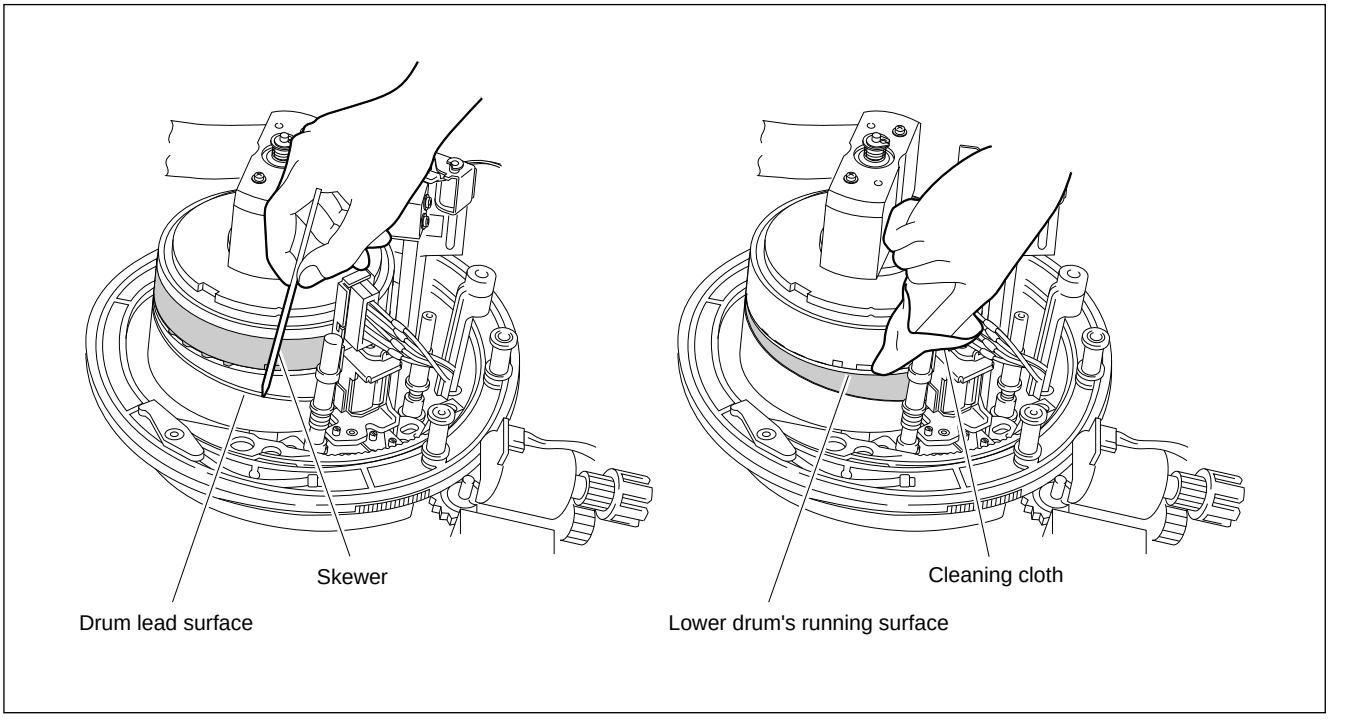
1. As shown in the figure, put a skewer (or an equivalent) along the drum lead surface and remove the magnetic powder.

   CAUTION

   1. Do not use a metallic skewer instead of the skewer. This may damage the tape running surface.
   2. Tracking may be badly influenced when magnetic powder attaches to the drum lead surface. Remove the magnetic powder completely during cleaning.

2. Clean the drum lead surface and lower drum's tape running surface (shaded portion in the figure) with a cleaning cloth moistened with a cleaning fluid.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Lower Drum's Tape Running Surface and Lead Surface Cleaning

2-1-4. Stationary Heads Cleaning

CAUTION

Be careful not to damage the head surface when cleaning the stationary heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

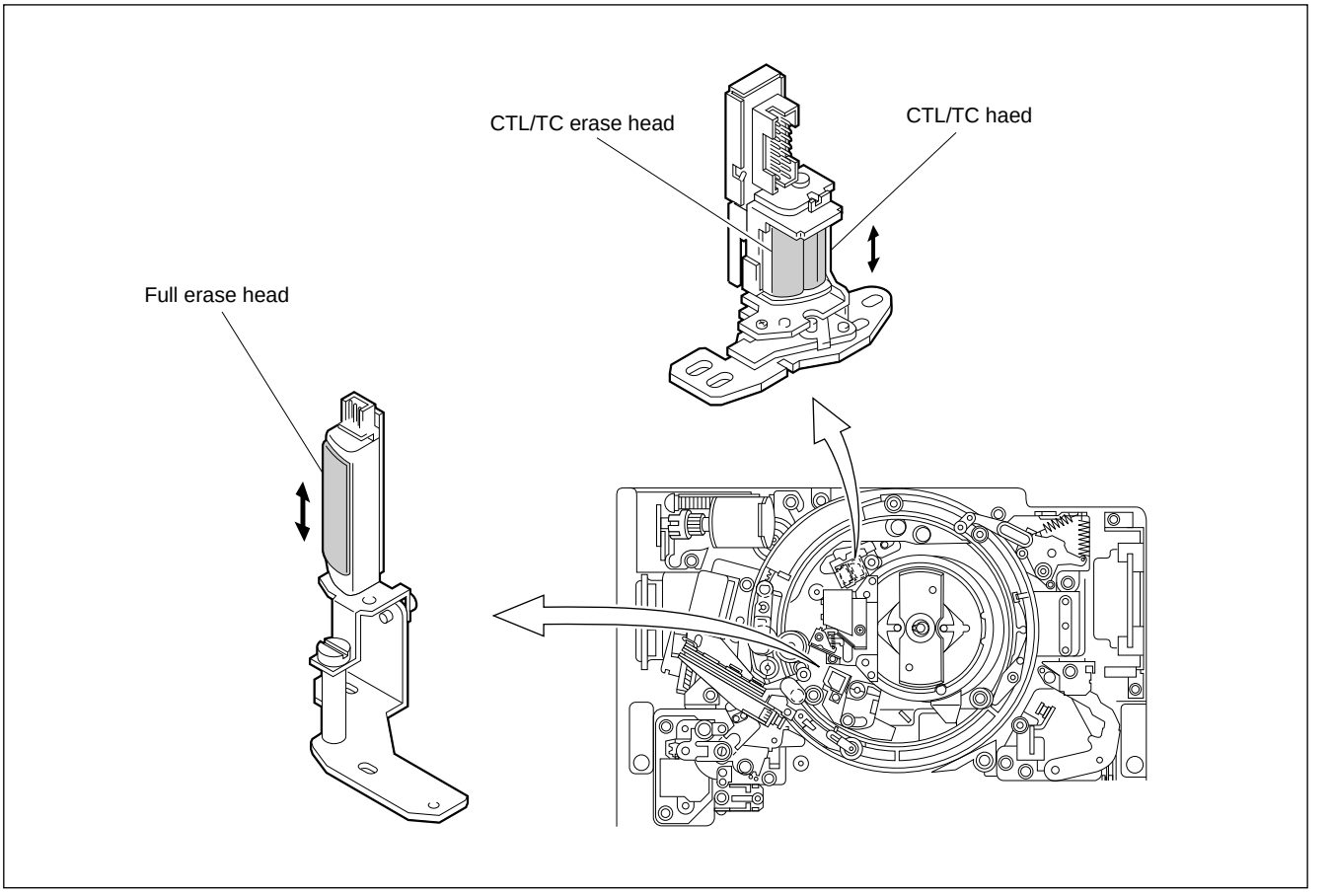
Procedures

1. Clean the tape running surfaces of the CTL/TC head and Full erase head in the vertical direction with a cleaning cloth moistened with a cleaning fluid.

   CAUTION

   An error may occur in the recording or playback when magnetic powder attaches to the head gap portion of the CTL/TC head and Full erase head. Remove the magnetic powder completely during cleaning.

2. After cleaning, wipe it with a dry cleaning cloth two or three times.



Stationary Heads Cleaning

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2-1-5. Tape Running System and Tape Cleaner Cleaning

CAUTION

The tape cleaner has a sharp edge. Do not touch the edge with bare hands. Pay careful attention when cleaning the tape cleaner.

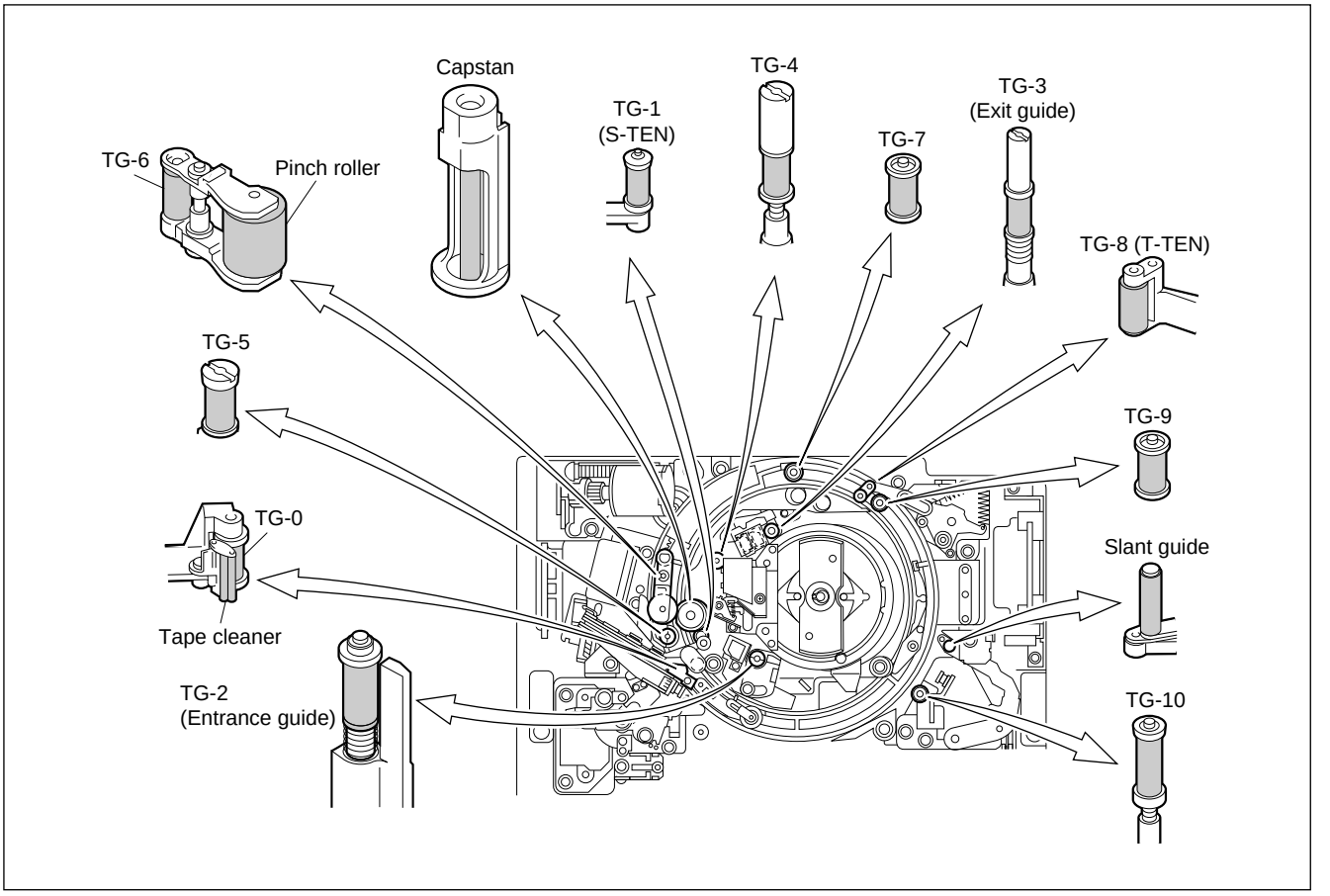
Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Procedures

1. Clean the tape running surfaces (shaded portions in the figure) of each guide with cleaning cloth moistened with a cleaning fluid.

2. After cleaning, clean it with a dry cleaning cloth two or three times.



Tape Running System and Tape Cleaner Cleaning

2-1-6. Cassette Compartment Cleaning

CAUTION

- Be careful not to apply an excessive force to the compartment when cleaning the cassette compartment.
- Do not clean the door with alcohol. This may cause a crack.

Tools

- Cloth (or Gauze)
- Vacuum cleaner

Procedures

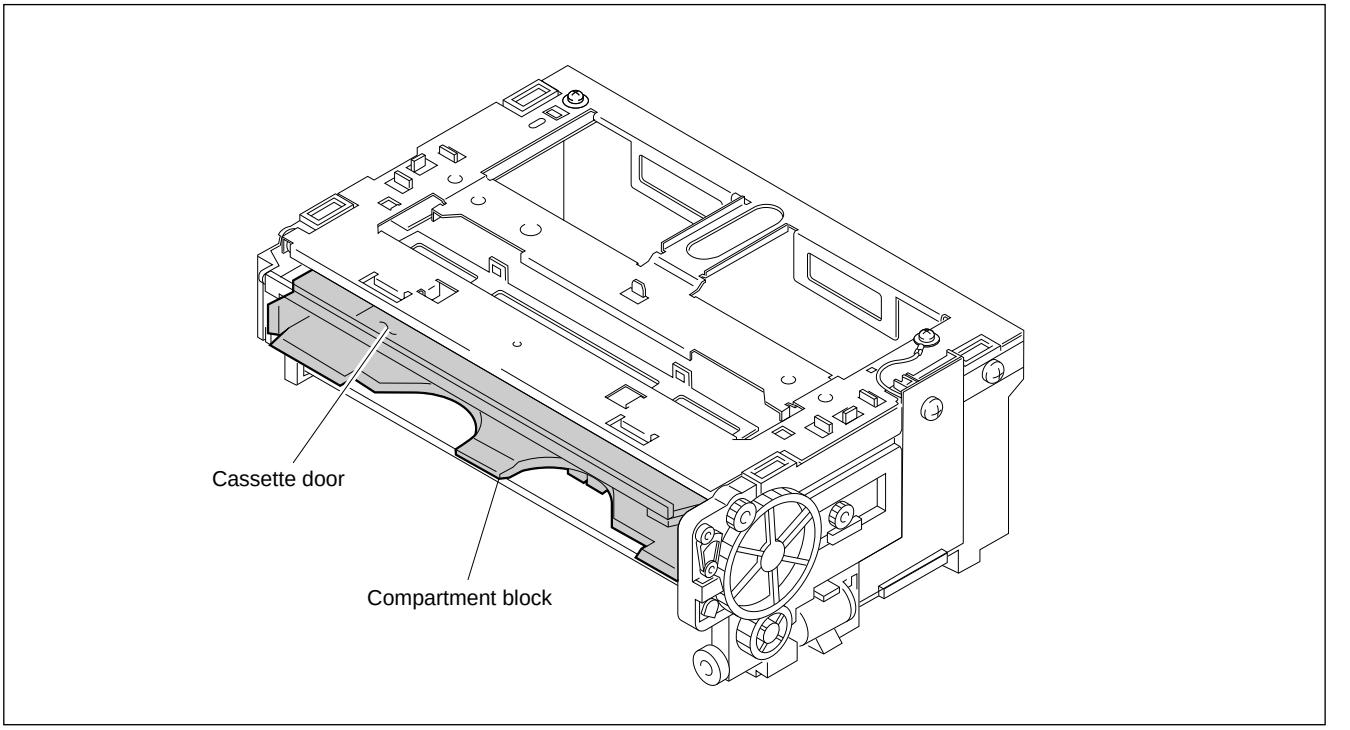
1. Remove the cassette compartment from the unit.

2. Remove the dust on the cassette compartment from the cassette insertion inlet using a vacuum cleaner.

3. Clean the compartment (shaded portion in the figure) with a dry cloth (or gauze).

   CAUTION

   Do not apply an excessive force to the compartment block.



Cassette Compartment Cleaning

2-2. Periodic Check

To make the most of the functions, fully realize performance of the unit, lengthen the life of the unit and tape, a periodic check is recommended.
Write value of “Hours Meter” (the value which would not be reset) into the Service Record Label attached to the back of upper lid at service of periodic maintenance. And make reference to this service record for decision on the timing of next check.

2-2-1. Hours Meter

The hours meter can be displayed on the terminal screen of a personal computer (PC) connected to RS-232C port of this unit. Perform a periodic check with this hours meter as a reference.

1. Display procedure

Refer to Section 6.

2. Contents of display

HOURS METER	DESCRIPTION
① Operation Hours	Accumulated hours when the power of the unit is on. (Display the time by an hour.)
② Drum Run Hours	Accumulated hours when the drum rotates in the threading end state. (Display the time by an hour.)
③ Thread Counter	Accumulated number of threading and unthreading times. (Display the actual number.)

2-2-2. Periodic Check List

Perform periodic check in accordance with the table.
The replacement time shown in the table is not the guarantee term of parts.

Note:

The part marked with “↓” in the table is replaced simultaneously with when the part in the column below its mark is replaced.
The “R” mark in this table indicates the replacement timing of parts.

Item	Hours Meter	Inspetion Hours (h) 1500	3000	4500	6000	Replacement Parts Part Name	Parts No.	Q'ty	Procedure
Drum Block									
Upper Drum *1	②	–	R	–	↓	UPPER DRUM ASSY (DDR-55-R)	A-8312-567-	1	Refer to Section 3-3-1.
Brush/Slip Ring	②	–	R	–	↓	BRUSH SR4 ASSY (RP)	A-8312-151-	1	Refer to Section 3-3-2.
Drum *1	②	–	–	–	R	DRUM ASSY (DDH-55A-R)	A-8312-566-	1	Refer to Section 3-3-3.
Cleaners									
Cleaning Roller *2	②	Replace when used 1,000H.			↓	V CLEANING ROLLER ASSY	X-3167-281-	1	Refer to Section 3-3-4.
						CR SPACER	3-182-765-	1	
Rotary Head Cleaner	②	–	–	–	R	VIDEO HEAD CLEANER ASSY	A-8267-398-	1	Refer to Section 3-3-4.
CTL/TC Head Cleaner *2	②	–	R	–	R	CL ARM ASSY	X-3167-053-	1	Refer to Section 3-5-1.
Tape Running System									
Pinch Roller *2	②	–	R	–	R	GROOVED PINCH ARM ASSY	X-3604-682-	1	Refer to Section 3-5-2.
CTL/TC Head	②	–	–	–	R	AT HEAD ASSY	A-8318-771-	1	Refer to Section 3-6-1.
Capstan Motor	②	–	–	–	R	DC MOTOR	1-698-179-	1	Refer to Section 3-6-2.
Driving System									
Pinch Solenoid	②	–	–	–	R	PINCH PRESS ASSY	A-6749-117-	1	Refer to Section 3-6-3.
Reel Motor	②	–	R	–	R	RS TABLE (T) BLOCK ASSY	A-8267-702-	1	Refer to Section 3-2-3.
						RS TABLE (S) BLOCK ASSY	A-8267-703-	1	
Others									
Air Filter *1	①	–	–	–	R	FILTER ASSY	A-8007-311-	1	Refer to Section 3-7-2.
Fan Motor	①	Replace when used 50,000H.				FAN MOTOR	1-698-779-	1	Refer to Section 3-7-1.

*1: Do not put this unit in a place subject to high humidity or excessive dust. This may shorten the life of these parts. Therefore, it is recommended to use this unit in an air-conditioned and dust-free environment and store the tape at ordinary temperature and humidity.
*2 : The life of these parts may be shortened depending on the operating condition of this unit or the operating environment.

For parts that are used for special application in which the cassette tape in ejected and inserted 50 times or more a day, the parts blow are added as the parts to be replaced.

Item	Hours Meter	Inspetion Hours (h) 1500	3000	4500	6000	Replacement Parts Part Name	Parts No.	Q'ty	Procedure
Tape Running System									
S Tension Regulator	③	Replace when used 200,000 times.				TENSION REGULATOR ASSY	A-8277-408-	1	Refer to Section 3-4-1.
T Tension Regulator	③	Replace when used 200,000 times.				T-TEN ASSY	A-8273-996-	1	Refer to Section 3-6-5.
T Drawer	③	Replace when used 200,000 times.				T DRAWER ASSY	A-8274-876-	1	Refer to Section 3-6-6.
Driving System									
Threading Motor	③	Replace when used 200,000 times.				GEAR BOX ASSY	A-8273-997-	1	Refer to Section 3-6-4.
Threading Ring	③	Replace when used 200,000 times.				THREADING RING ASSY	A-8267-395-	1	Refer to Section 3-5-3.
Pinch Arm Guard	③	Replace when used 200,000 times.				PINCH ARM GUARD	3-180-853-	1	
CL Guide Rail	③	Replace when used 200,000 times.				CL GUIDE RAIL	3-180-874-	1	
Brake Solenoid	③	Replace when used 200,000 times.				TABLE (T) BLOCK ASSY TABLE (S) BLOCK ASSY	A-8267-702- A-8267-703-	1 1	Refer to Section 3-2-3.
Other									
Cassette Compartment Assy	③	Replace when used 200,000 times.				CASSETTE COMPARTMENT ASSY	A-8267-863-	1	Refer to Section 1-1-2.

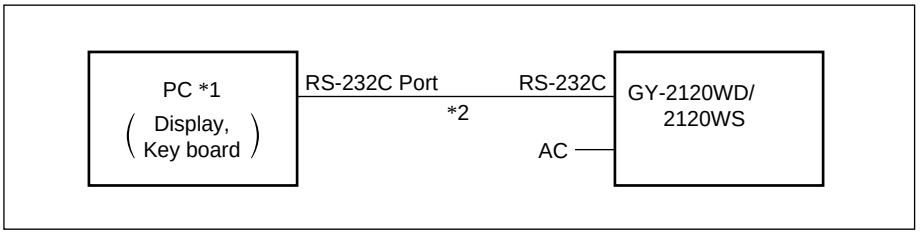
2-2-3. REC Current Automatic Adjustment

Perform this adjustment every 1,000 hours (By “Drum Run Hours”).

Equipment

- Personal computer (PC)

Connection (except measuring equipment)



*1: Refer to Section 6-1-1 regarding a PC .
*2: Refer to Section 1-4 regarding an RS-232C cable.

Tools

- Blank tape

Adjustment

(1) Activate the terminal software.
(2) Enter the drive maintenance (MDRV) mode. Refer to Section 6-2-6.
(3) Enter “RF05: REC Current Adjust”.

(4) Insert a blank tape.
(5) Press the “Y” key to initiate the adjustment.

(6) When the adjustment succeeds, message “Adjust Complete” is displayed on the screen.

Note

The data values described on right are samples.

```
------>RF05
RF Adjust [Auto Adjust]

  REC Current Adjust

   Set Blank Tape
    Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

   Ach  REC Current  80
   Bch  REC Current  80
   Cch  REC Current  80
   Dch  REC Current  80

------>_
```

(7) Enter “RF07: RF NV-RAM Save”.

(8) Press the “Y” key to save the adjustment data in a NV-RAM.
(9) When the data saving is completed, message “Saving....OK” is displayed on the screen.

```
------>RF07
RF Adjust [NV-RAM Control]

   RF NV-RAM Save

    Are you ready (y/n)? Yes

     Saving....OK

     Data Saved

------>_
```

Section 3
Replacement of Mechanical Parts

3-1. General Information for Parts Replacement

3-1-1. Notes

1. Tape Cleaner

CAUTION

Never touch the edge of the tape cleaner with bare hands.
It is in danger of cutting your finger because the tape cleaner has a sharp edge.
Pay careful attention when replacing or adjusting the peripheral parts.

2. Grease and Oil

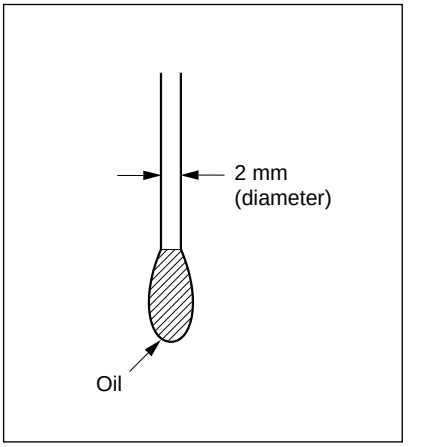
- Do not use ones other than the specified grease and oil. This may cause a trouble or malfunction because of the difference in viscosity or components. Moreover, do not use grease or oil in which dust is mixed. This may cause a trouble or malfunction.

  - Grease (SGL-601): 7-651-000-10
  - Oil: 7-661-018-18

- Smear just enough grease to create a thin film on the surface of the part.
  Any grease that adheres to other surrounding parts must be wipe with gauze or soft cloth.

- A drop of oil is defined as follows:
  About the amount that will adhere to the end of a stick 2 mm in diameter, as shown in the figure.

- Do not use the grease and oil except for specified portions.



Oil

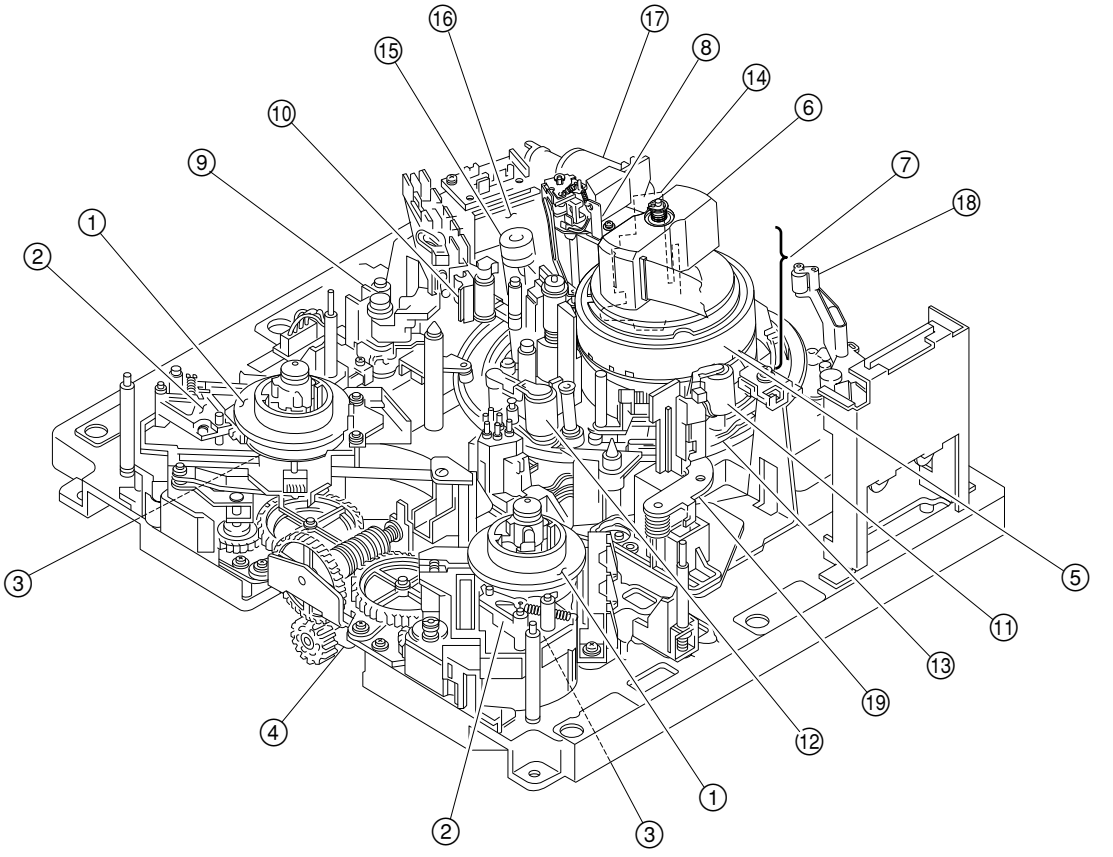
3. Stop Washer

Do not reuse the removed stop washer again.

- Stop washer (d = 2.3 mm): 3-669-596-00

3-1-2. Index

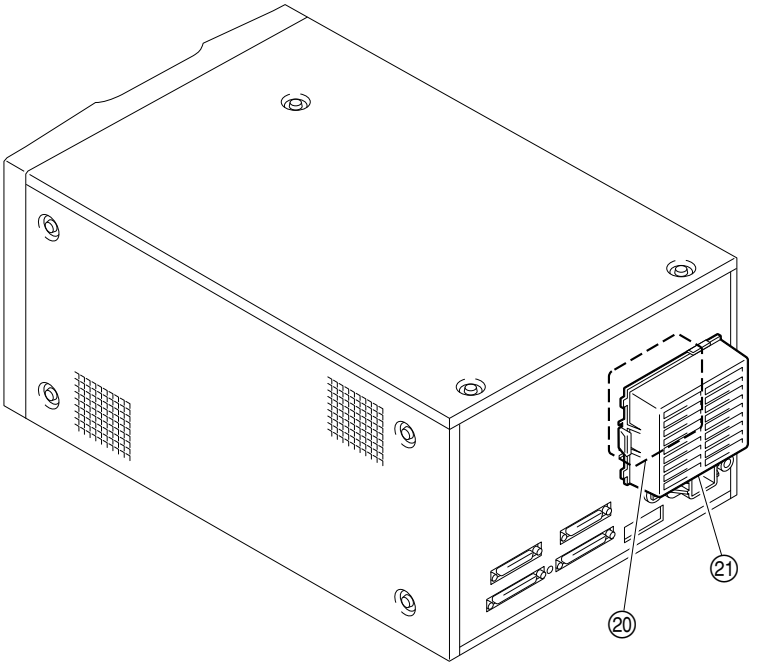
<Mechanical Deck Block>



No.	Part Name	Section
1	Reel Table Assembly	3-2-1
2	Brake Lining	3-2-2
3	Reel Motor Assembly	3-2-3
4	Reel Shift Assembly	3-2-4
5	Upper Drum Assembly	3-3-1
6	Brush/slip ring Assembly	3-3-2
7	Drum Assembly	3-3-3
8	Rotary Head Cleaner Assembly	3-3-4
9	S Tension Regulator Assembly	3-4-1
10	Tape Cleaner	3-4-2

No.	Part Name	Section
11	CTL/TC Head Cleaner	3-5-1
12	Pinch Roller	3-5-2
13	Threading Ring	3-5-3
14	CTL/TC Head	3-6-1
15	Capstan Motor	3-6-2
16	Pinch Press Assembly	3-6-3
17	Gear Box Assembly	3-6-4
18	T Tension Arm	3-6-5
19	T Drawer Arm	3-6-6

<Overall Block>



No.	Part Name	Section
20	Fan Motor	3-7-1
21	Air Filter	3-7-2

3-1-3. Threading End Mode and Unthreading End Mode

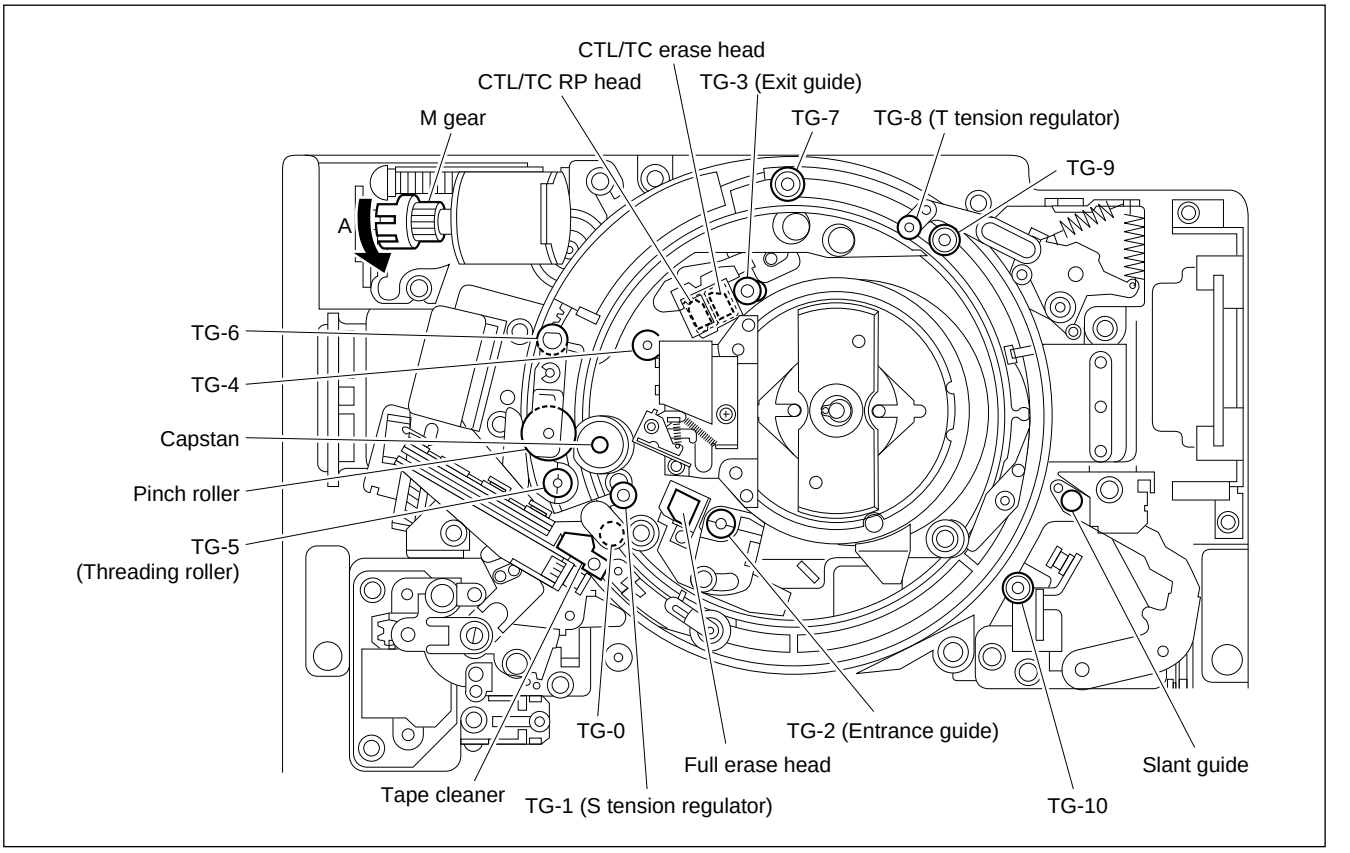
1. Threading End Mode

Threading end mode means that the threading ring rotates in the counterclockwise direction, then stops.

There are two ways of putting the unit into the threading end mode without installing the cassette compartment.

Method ①: Turned on the power, execute maintenance mode SV13: Threading Motor Check using a PC, and put the unit into the threading end state. (Refer to Section 6-2.)

Method ②: Turn the M gear of the gear box assembly in the direction of the arrow A with the power turned off state.



Threading End Mode

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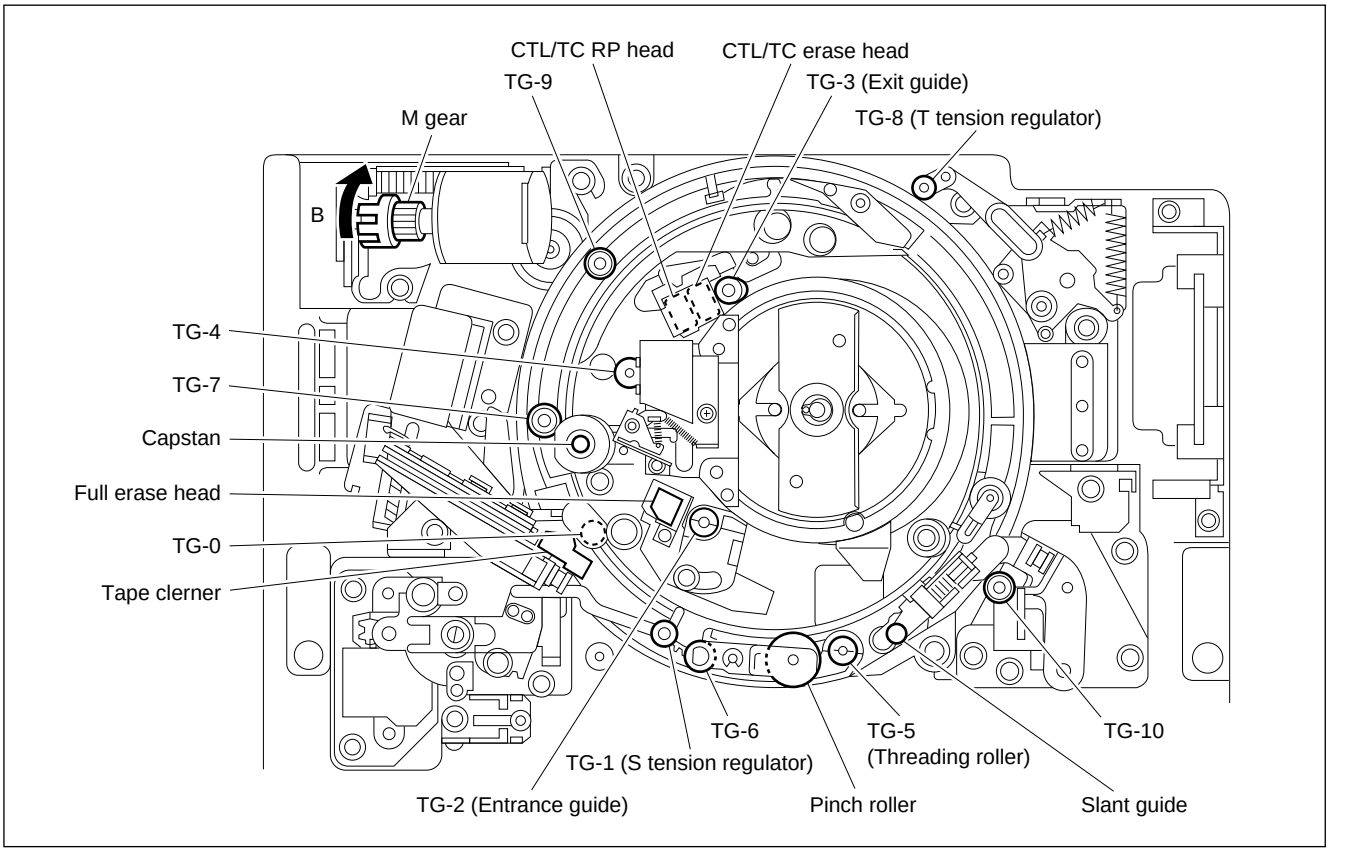
2. Unthreading End Mode

Unthreading end mode means that the threading ring rotates in the clockwise direction, then stops. (It is same state with EJECT completion mode.)

There are two ways of putting the unit into the unthreading end mode without installing the cassette compartment.

Method ①: In the threading end atate, execute maintenance mode SV13: Threading Motor Check using a PC, and put the unit into the threading end state. (Refer to Section 6-2.)

Method ②: Turn the M gear of the gear box assembly in the direction of the arrow B with the power turned off state.



Unthreading End Mode

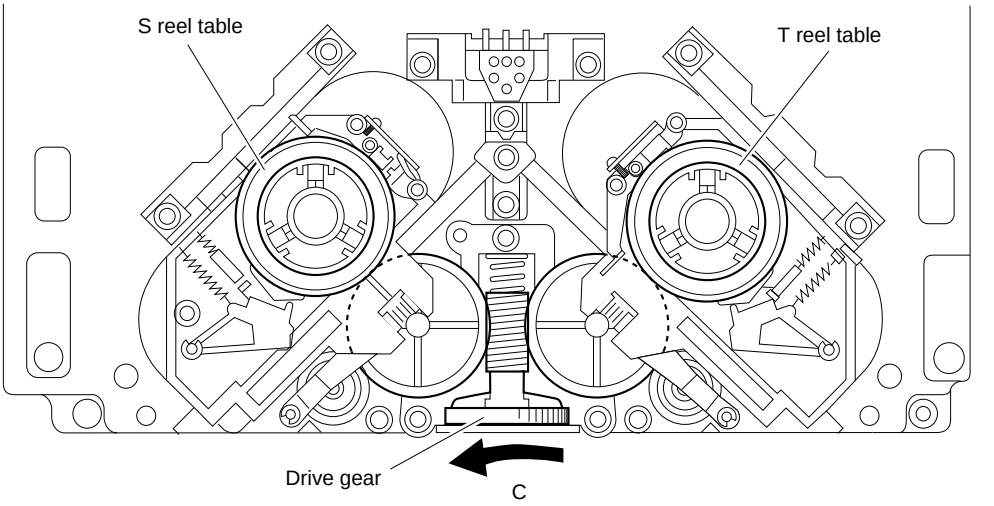
3-1-4. L Cassette Position and S Cassette Position

1. L Cassette Position

L cassette position means that the reel tables are in the position of L cassette tape.

There is the way of putting the reel tables into the L cassette position without installing the cassette compartment.

Turn the drive gear fully in the direction of the arrow C.



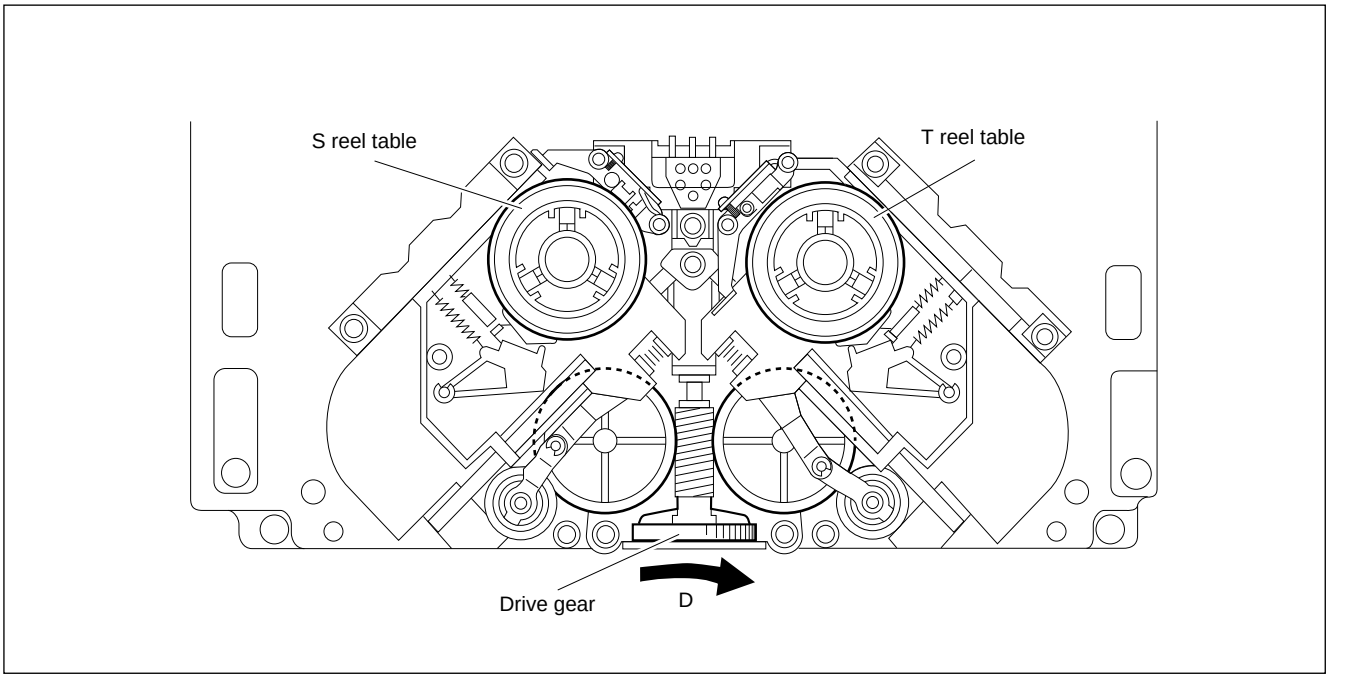
L Cassette Position

2. S Cassette Position

S cassette position means that the reel tables are in the position of S cassette tape.

There is the way of putting the reel tables into the S cassette position without installing the cassette compartment.

Turn the drive gear fully in the direction of the arrow D.



S Cassette Position

3-2. Reel Block

3-2-1. Reel Table Assembly Replacement

Outline

Replacement

1. Remove the Reel Table Assembly
2. Install the Reel Table Assembly

Adjustment after Replacement

3. Confirm the Reel Table Height (Refer to Section 4-4.)
4. Confirm the Reel Brake Clearance (Refer to Section 4-5.)
5. Confirm the Reel Brake Release Amount (Refer to Section 4-6.)
6. Confirm the Reel Table Rotation Sensor Position (Refer to Section 4-7.)
7. Perform the Reel FG Duty Automatic Adjustment
   (SV02: S-Reel FG Duty Adjust/SV03: T-Reel FG Duty Adjust)
   (Refer to Section 6-5-2/Section 6-5-3.)

Note

How to replace the reel table assembly is the same on the supply and take-up sides.

Tools

- L-shaped wrench (1.5 mm): 7-700-736-05
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

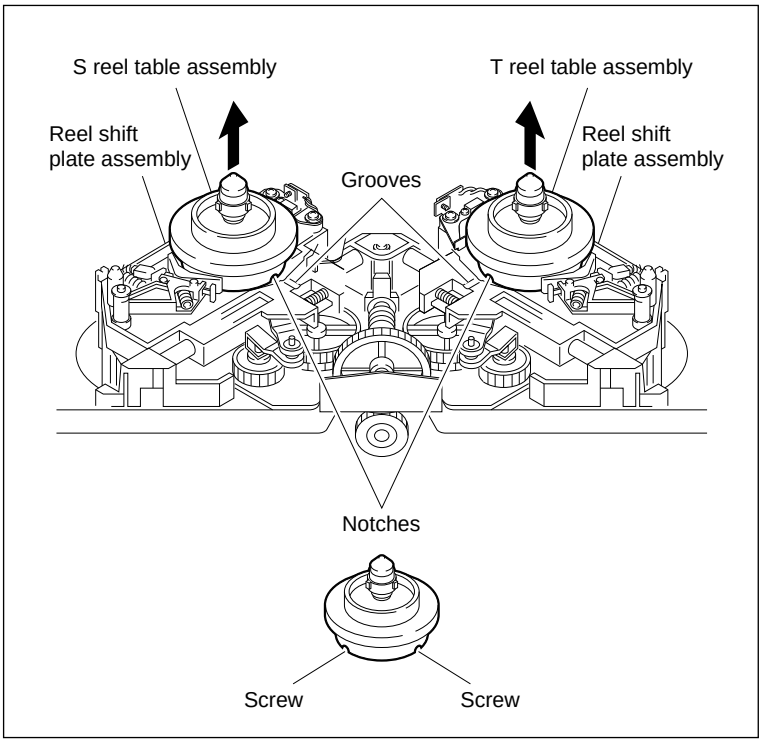
Removal

1. Remove the Reel Table Assembly

(1) Align one of the two notches at the bottom of the reel table assembly with the groove position of the reel shift plate assembly.
(2) Insert the L-shaped wrench into the notch at the bottom of the reel table assembly along the groove of the reel shift plate assembly.
(3) Loosen the screws fixing the reel table assembly.
(4) Align another notch at the bottom of the reel table assembly with the groove position of the reel shift plate assembly.
(5) Loosen the screw in the same way as in step (2).
(6) Remove the reel table assembly.

CAUTION

When the reel table assembly is removed, a poly-slider washer for reel table height adjustment may adhere to it. In this case, remove the poly-slider washer from the reel table assembly and return it to the reel motor shaft position.



Remove the Reel Table Assembly

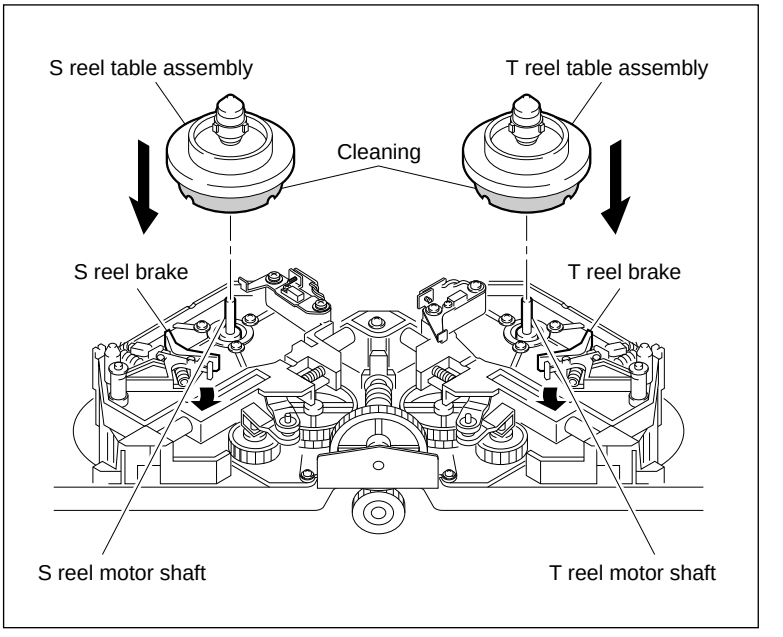
Installation

2. Install the Reel Table Assembly

(1) Clean the reel table assembly along the circumference.
(2) Release the reel brake in the direction indicated by the arrow and pass the reel table assembly through the reel motor shaft.

CAUTION

Tighten the two screws fixing the reel table assembly after the reel table height adjustment is completed.



Install the Reel Table Assembly

Adjustment after Replacement

3. Confirm the Reel Table Height
Refer to Section 4-4.

4. Confirm the Reel Brake Clearance
Refer to Section 4-5.

5. Confirm the Reel Brake Release Amount
Refer to Section 4-6.

6. Confirm the Reel Table Rotation Sensor Position
Refer to Section 4-7.

7. Perform the Reel FG Duty Automatic Adjustment
Refer to Section 6-5-2/Section 6-5-3.
(SV02: S-Reel FG Duty Adjust/
SV03: T-Reel FG Duty Adjust)

3-2-2. Brake Lining Replacement

Outline

Replacement

1. Remove the Reel Table Assembly (Refer to step 1 in Section 3-2-1.)
2. Remove the Brake Assembly
3. Remove the Brake Lining
4. Install the Brake Lining
5. Install the Brake Assembly
6. Install the Reel Table Assembly (Refer to step 2 in Section 3-2-1.)

Adjustment after Replacement

7. Confirm the Reel Table Height (Refer to Section 4-4.)
8. Confirm the Reel Brake Clearance (Refer to Section 4-5.)
9. Confirm the Reel Brake Release Amount (Refer to Section 4-6.)

Note

How to replace the brake lining assembly is the same on the supply and take-up sides.

Tools

- L-shaped wrench (1.5 mm): 7-700-736-05
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

Removal

1. Remove the Reel Table Assembly
Refer to step 1 in Section 3-2-1.

2. Remove the Brake Assembly
(1) Unhook the spring put on the reel shift plate assembly.
(2) Remove the E ring, then remove the brake assembly.

3. Remove the Brake Lining
Unhook the spring put on the brake arm block, then remove the brake lining.

Installation

4. Install the Brake Lining
(1) Combine a new brake lining with the brake arm block as shown in the figure.
(2) Hook the spring to the brake arm block.

5. Install the Brake Assembly
(1) Pass the brake assembly through the shaft of the reel shift plate assembly.
(2) Hook the spring to the reel shift plate assembly.
(3) Fix the brake assembly by the E ring.

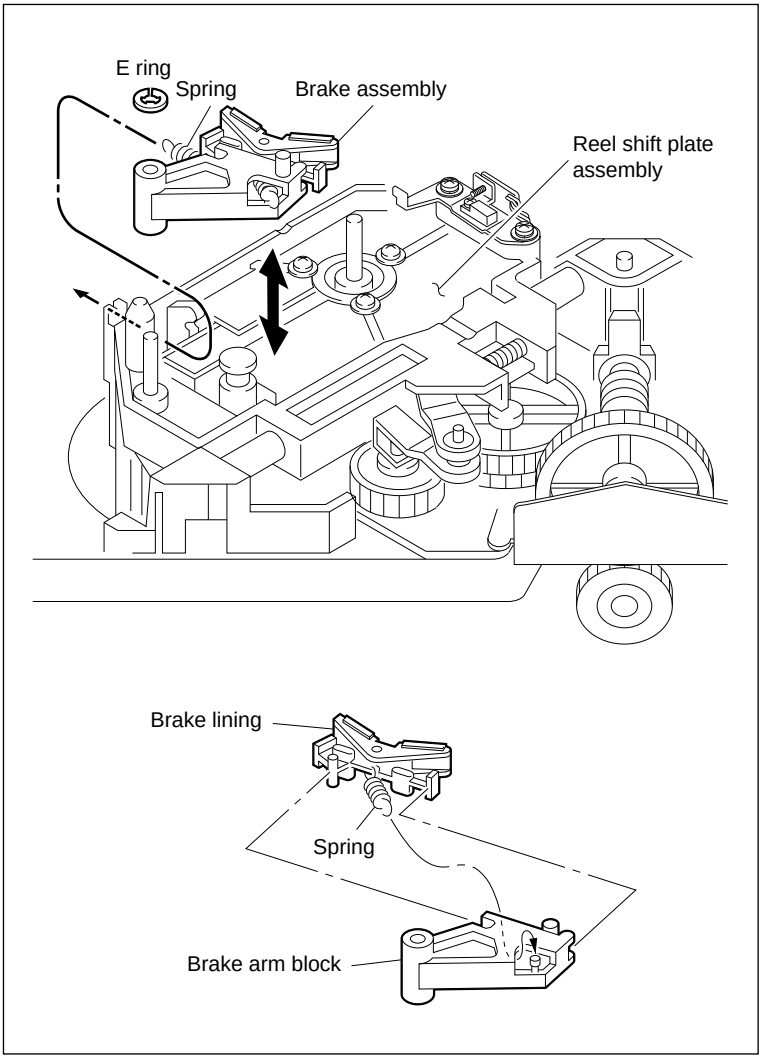
6. Install the Reel Table Assembly
Refer to step 2 in Section 3-2-1.

Adjustment after Replacement

7. Confirm the Reel Table Height
Refer to Section 4-4.

8. Confirm the Reel Brake Clearance
Refer to Section 4-5.

9. Confirm the Reel Brake Release Amount
Refer to Section 4-6.



Remove/Install the Brake Lining

3-2-3. Reel Motor Assembly Replacement

Outline

Replacement

1. Disconnect the Flat Cable
   (S side: CN10/MS-54 Board, T side: CN9/MS-54 Board)
2. Remove the Reel Table Assembly
3. Remove the Crank Arm and Slide Shaft Holder
4. Remove the Reel Shift Plate Assembly
5. Disconnect the Flat Cable
   (S side: CN923/RM-82 Board, T side: CN923/RM-82 Board)
6. Disconnect the Connectors
   (S side: CN926 and 927/RM-82 Board, T side: CN926 and 927/RM-82 Board)
7. Install the Slide Shaft
8. Install the Reel Shift Plate Assembly
9. Smear Grease to the Slide Shaft
10. Install the Crank Arm

Adjustment after Replacement

11. Confirm the Reel Motor Shaft Slantness (Refer to Section 4-2.)
12. Install the Reel Table Assembly
13. Confirm the Cassette Pillar Height (Refer to Section 4-3.)
14. Confirm the Reel Table Height (Refer to Section 4-4.)
15. Connect the Flat Cable
    (S side: CN10/MS-54 Board, T side: CN9/MS-54 Board)
16. Confirm the Reel Brake Clearance (Refer to Section 4-5.)
17. Confirm the Reel Brake Release Amount (Refer to Section 4-6.)
18. Confirm the Reel Motor Operation
    (SV11: S-Reel Motor Check/SV12: T-Reel Motor Check)
    (Refer to Section 6-2.)
19. Perform the Reel FG Duty Automatic Adjustment
    (SV02: S-Reel FG Duty Adjust/SV03: T-Reel FG Duty Adjust)
    (Refer to Section 6-5-2/Section 6-5-3.)
20. Perform the Reel Motor Offset/Friction Automatic Adjustment
    (SV05: S-Reel offset/friction Adjust/SV06: T-Reel offset/friction Adjust)
    (Refer to Section 6-5-5/Section 6-5-6.)
21. Perform the Reel Motor Torque Automatic Adjustment
    (SV07: S-Reel Torque Adjust/SV08: T-Reel Torque Adjust)
    (Refer to Section 6-5-7/Section 6-5-8.)

Note

The parts consisting reel motor is different between S side and T side. However, how to replace the reel motor assembly is the same for both sides.

Tools

- L-shaped wrench (1.5 mm): 7-700-736-05
- Torque screwdriver (12 kg•cm)(JB-5252): J-6252-520-A
- Torque screwdriver's bit (+3 mm, l=90 mm): J-6323-430-A
- Grease (SGL-601): 7-651-000-10
- Oil: 7-661-018-18
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

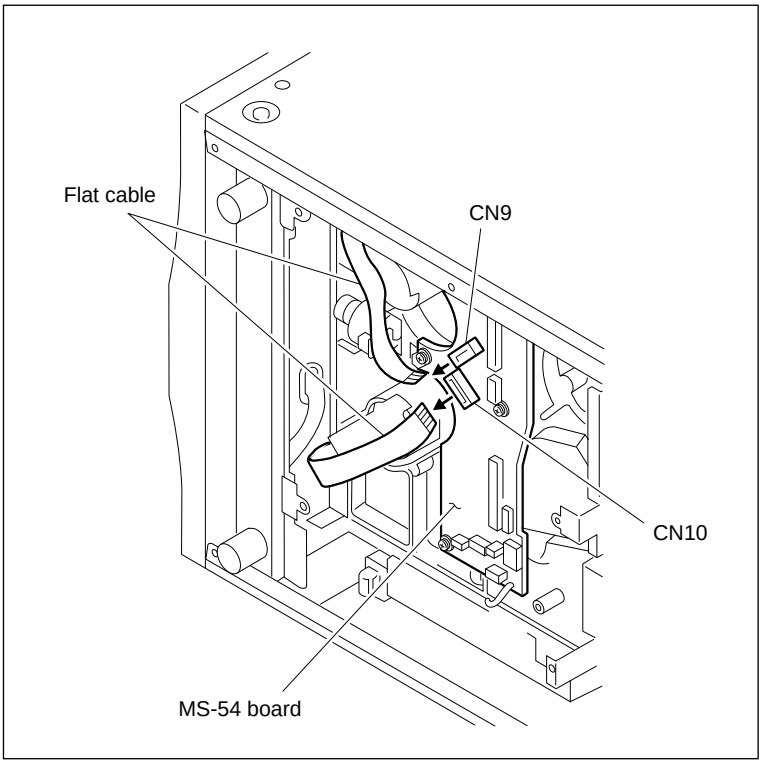
Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)
5. Remove the bottom plate. (Refer to Section 1-1-1.)
6. Remove the MA-83 board and the DR-327 board. (Refer to Section 1-8.)

Removal

1. Disconnect the Flat Cable

(1) Disconnect the flat cable connected with MS-54 board.
S side: CN10
T side: CN9



Disconnect the Flat Cable

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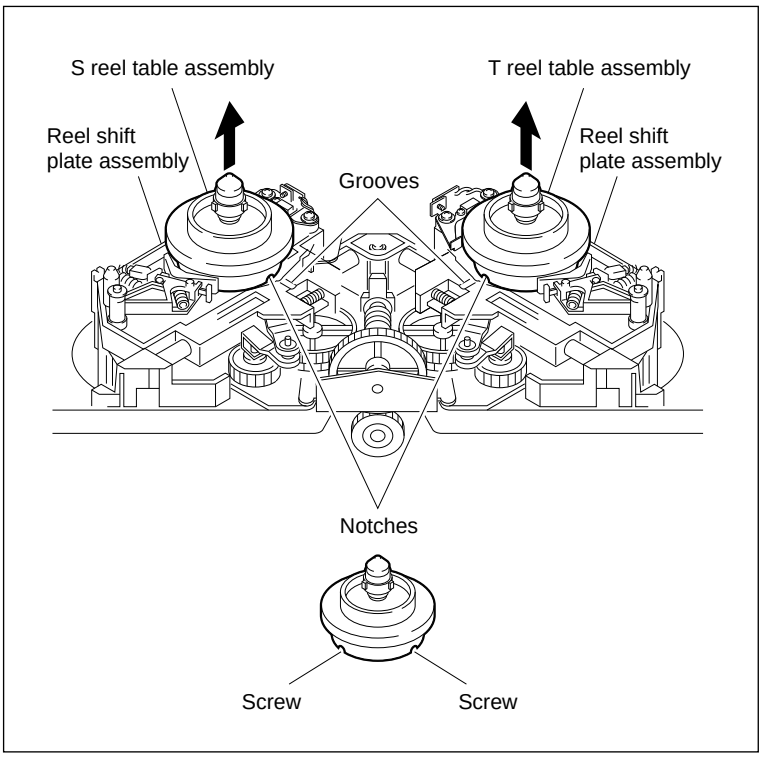
2. Remove the Reel Table Assembly

(1) Align one of the two notches at the bottom of the reel table assembly with the groove of the reel shift plate assembly.
(2) Insert the L-shaped wrench into the notch of the reel table assembly along the groove of the reel shift plate.
(3) Loosen the screws fixing the reel table assembly.
(4) Align another notch of the reel table assembly with the groove of the reel shift plate assembly.
(5) Loosen the screw in the same way as in step (2).
(6) Remove the reel table assembly.

CAUTION

When the reel table assembly is removed, a poly-slider washer for reel table height adjustment may adhere to it. In this case, remove that from the reel table assembly and return it to the reel motor shaft position.



Remove the Reel Table Assembly

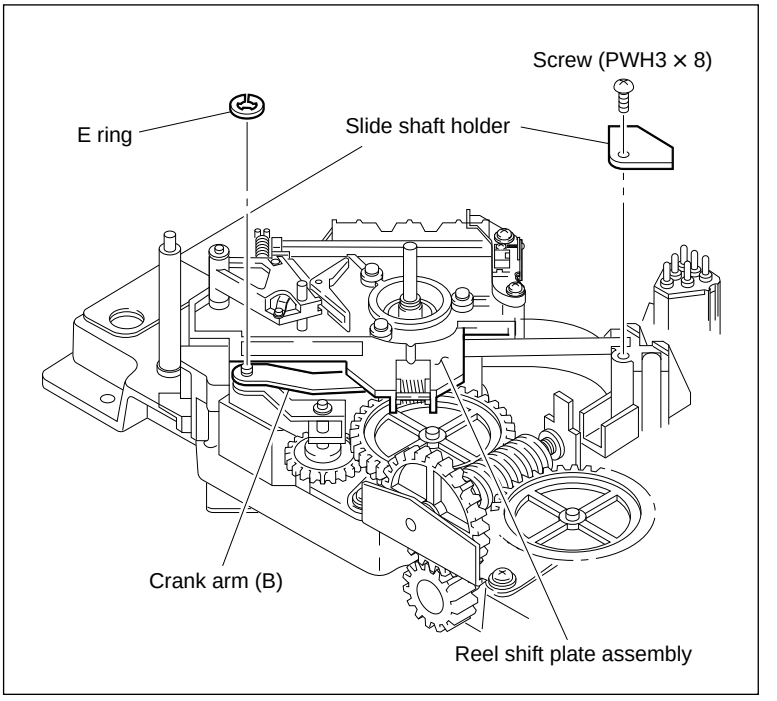
3. Remove the Crank Arm and Slide Shaft Holder

(1) Place the reel shift plate assembly in the intermediate position of S and L cassette.

Note

The reel shift plate assembly cannot be removed in the S cassette position or T cassette position.

(2) Remove an E ring and remove the crank arm (B).
(3) Remove the screw and remove the slide shaft holder.



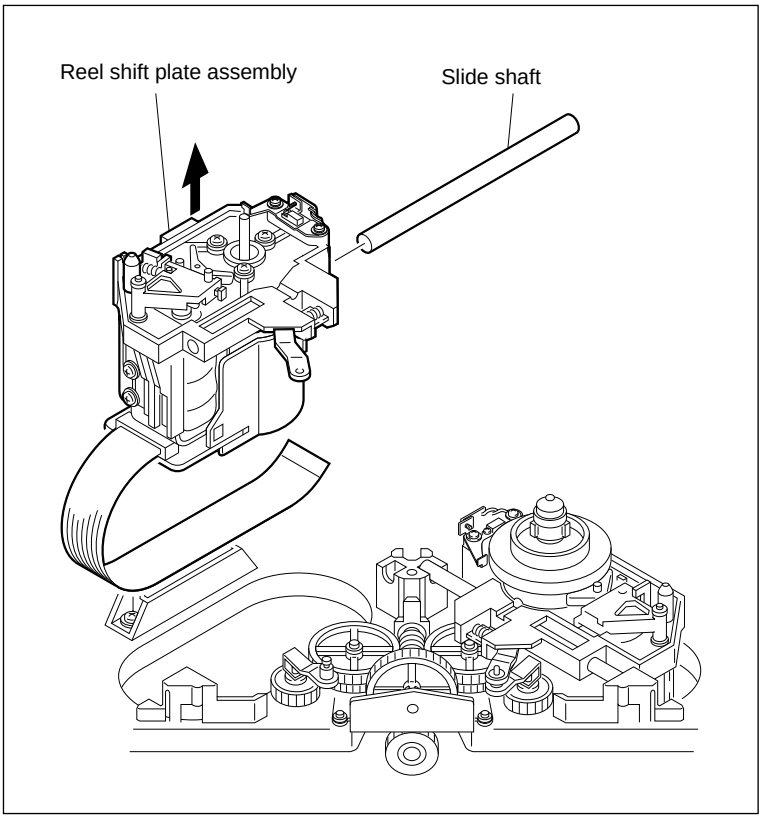
Remove the Crank Arm and Slide Shaft Holder

4. Remove the Reel Shift Plate Assembly

While pulling out the slide shaft and remove the reel shift plate assembly.

CAUTION

1. Be careful not to adhere grease smeared the slide shaft to another parts.
2. Be careful not to cause damage to the slide shaft during removal.



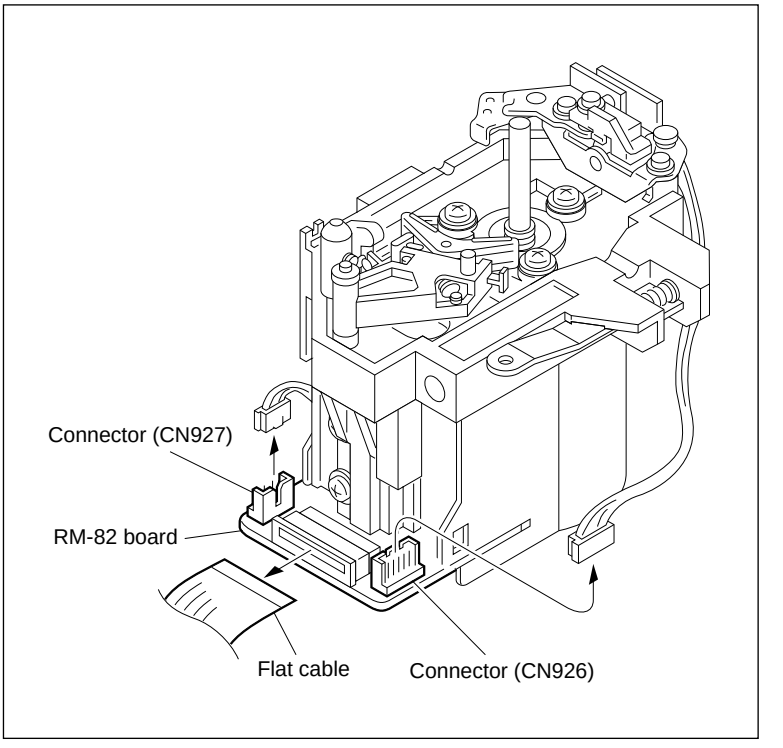
Remove the Reel Shift Plate Assembly

5. Disconnect the Flat Cable

Disconnect the flat cable connected with RM-82 board.

6. Disconnect the Connectors

Disconnect the two connectors CN926 and CN927 on the RM-82 board.



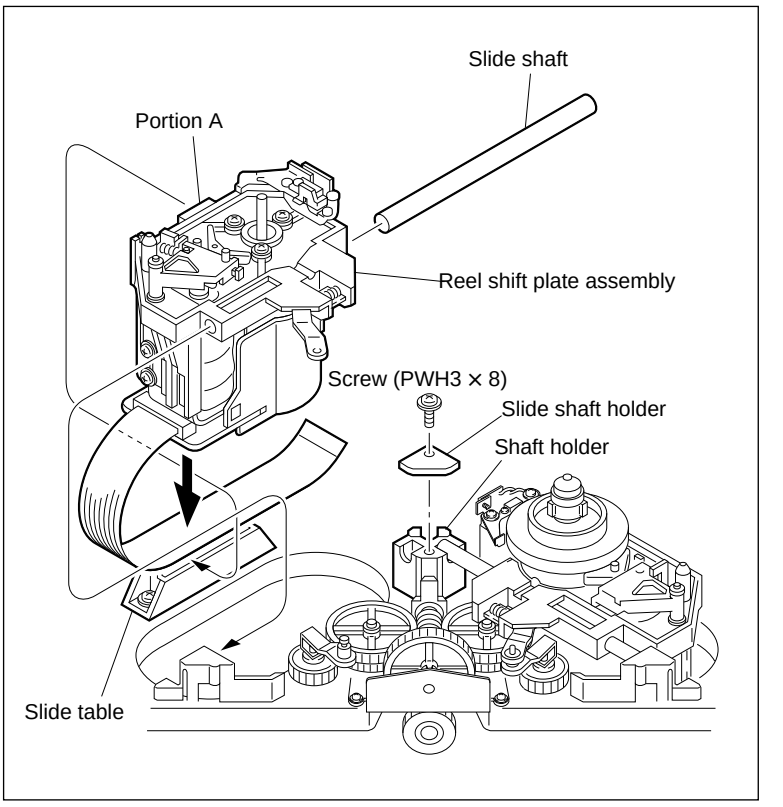
Disconnect the Flat Cable and Connectors

7. Install the Slide Shaft

(1) Wipe grease from the two holes where the slide shaft to be inserted of the reel shift plate assembly, then clean them.
(2) Wipe grease from the slide shaft removed in step 4, then clean it.
(3) Insert the slide shaft to the reel shift plate assembly.

8. Install the Reel Shift Plate Assembly

(1) Put the slide shaft on the shaft holder while inserting the portion A shown in the figure of the reel shift plate into the slide table.
(2) Install the slide shaft holder.



Install the Reel Shift Plate Assembly

9. Smear Grease to the Slide Shaft

(1) Smear grease very lightly to the slide shaft.
(2) Confirm that the reel shift plate assembly moves smoothly when moving it by hand towards S cassette and L cassette positions.

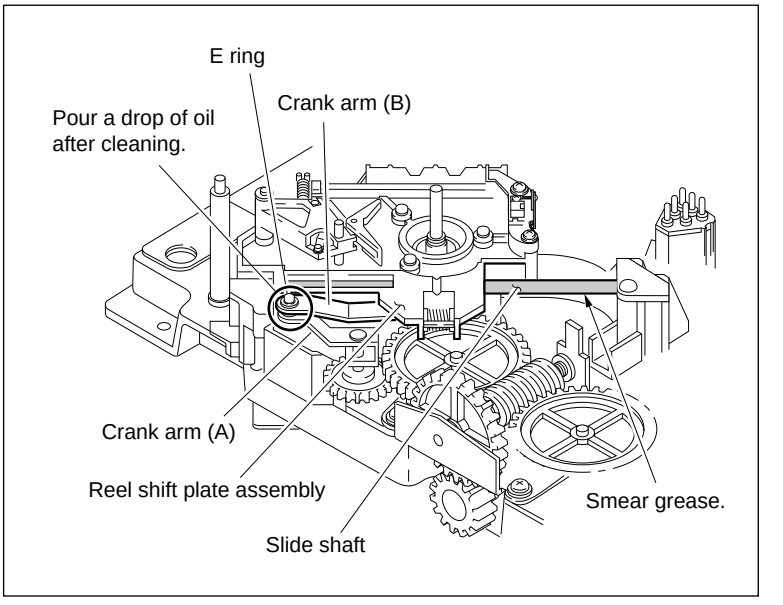
10. Install the Crank Arm

(1) Clean the shaft of the crank arm (A), then pour a drop of oil on it.
(2) Confirm that the reel shift plate assembly is in the intermediate position of S and L cassettes.

CAUTION

When installing the crank arm, place the reel shift plate assembly in the intermediate position of S and L cassettes for phase adjustment of the gears.

(3) Install the crank arm (B) to the shaft of the crank arm (A) with an E ring.



Smear Grease and Install the Crank Arm

Adjustment after Replacement

11. Confirm the Reel Motor Shaft Slantness

Refer to Section 4-2.

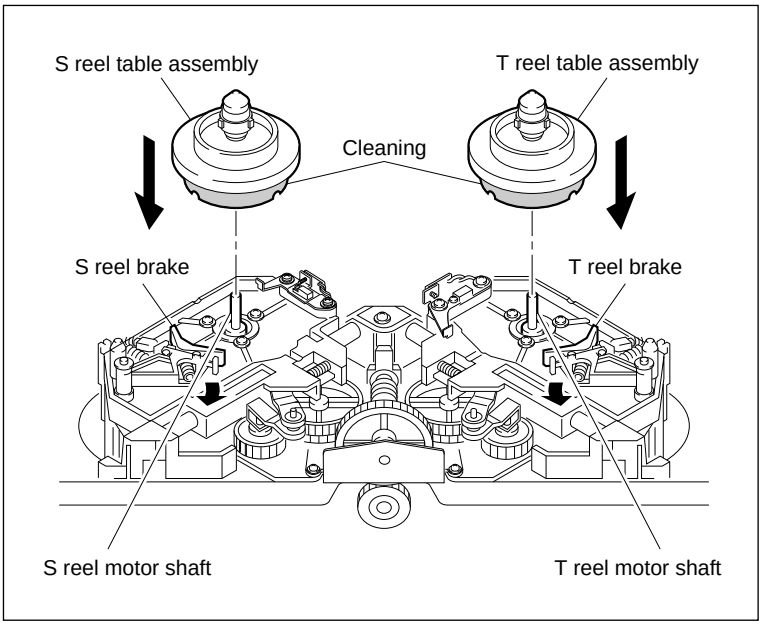
12. Install the Reel Table Assembly

(1) Clean the circumference of the reel table assembly with a cleaning cloth moistened with cleaning fluid.

(2) Pass the reel table assembly through the reel motor shaft while moving the reel brake in the direction indicated by the arrow.

CAUTION

Tighten two fixing screws after the adjustment of reel table height.



Install the Reel Table Assembly

13. Confirm the Cassette Pillar Height

Refer to Section 4-3.

14. Confirm the Reel Table Height

Refer to Section 4-4.

15. Connect the Flat Cable

(1) Connect the flat cable into the connector on the MS-54 board.
S side: CN10
T side: CN9

16. Confirm the Reel Brake Clearance

Refer to Section 4-5.

17. Confirm the Reel Brake Release Amount

Refer to Section 4-6.

18. Confirm the Reel Motor Operation

Refer to Section 6-2.
(SV11: S-Reel Motor Check/
SV12: T-Reel Motor Check)

19. Perform the Reel FG Duty Automatic Adjustment

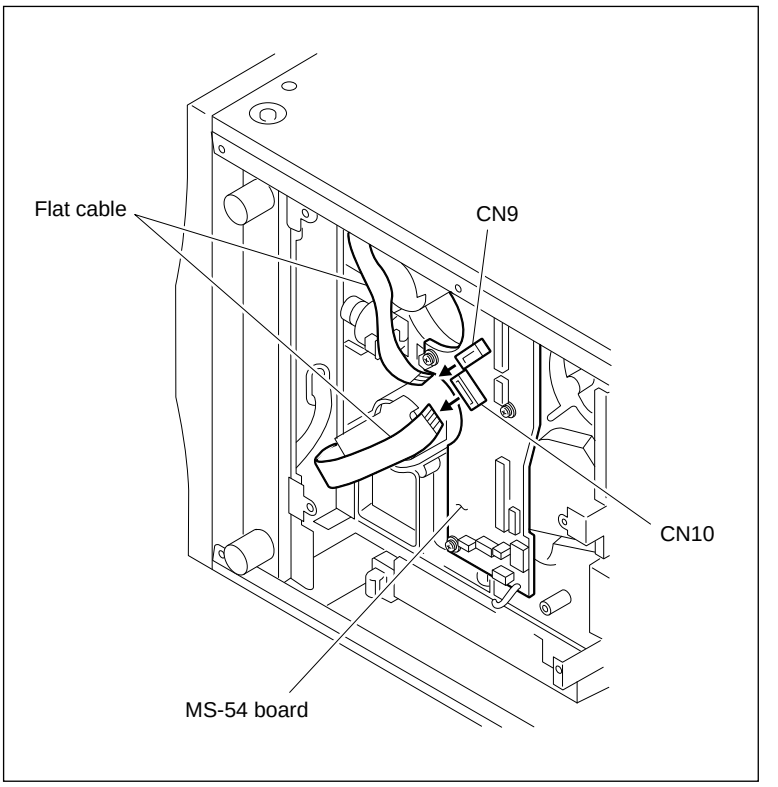
Refer to Section 6-5-2/Section 6-5-3.
(SV02: S-Reel FG Duty Adjust/
SV03: T-Reel FG Duty Adjust)

20. Perform the Reel Motor Offset/Friction Automatic Adjustment

Refer to Section 6-5-5/Section 6-5-6.
(SV05: S-Reel offset/friction Adjust/
SV06: T-Reel offset/friction Adjust)

21. Perform the Reel Motor Torque Automatic Adjustment

Refer to Section 6-5-7/Section 6-5-8.
(SV07: S-Reel Torque Adjust/
SV08: T-Reel Torque Adjust)



Connect the Flat Cable

3-2-4. Reel Shift Motor Replacement

Outline

Replacement

1. Remove the S and T Reel Shift Plate Assemblies
   (Refer to steps 1 through 4 in Section 3-2-3.)
2. Remove the Reel Shift Assembly
3. Install the Reel Shift Assembly
4. Smear Grease (Worm Gear)
5. Install the S and T Reel Shift Plate Assemblies
   (Refer to steps 8 through 10 in Section 3-2-3.)

Adjustment after Replacement

6. Confirm the Cassette Pillar Height (Refer to Section 4-3.)
7. Connect the Flat Cable
   (S side: CN10/MS-54 Board, T side: CN9/MS-54 Board)
   (Refer to step 15 in Section 3-2-3.)
8. Confirm the Reel Shift Motor Operation
   (SV17: Reel Shift Motor Check)
   (Refer to Section 6-2.)

Tools

- L-shaped wrench (0.89 mm): 7-700-736-06
- Torque screwdriver (6 kg•cm)(JB-5251): J-6252-510-A
- Torque screwdriver's hexagonal bit (d=0.89 mm, l=50 mm): J-6323-440-A
- Grease (SGL-601): 7-651-000-10
- Oil: 7-661-018-18
- Locking compound: 7-432-114-11
- Cleaning fluid: 9-919-573-01
- Cleaning cloth: 3-184-527-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)
5. Remove the front panel. (Refer to Section 1-1-1.)
6. Remove the MA-83 board and the DR-327 board. (Refer to Section 1-8.)

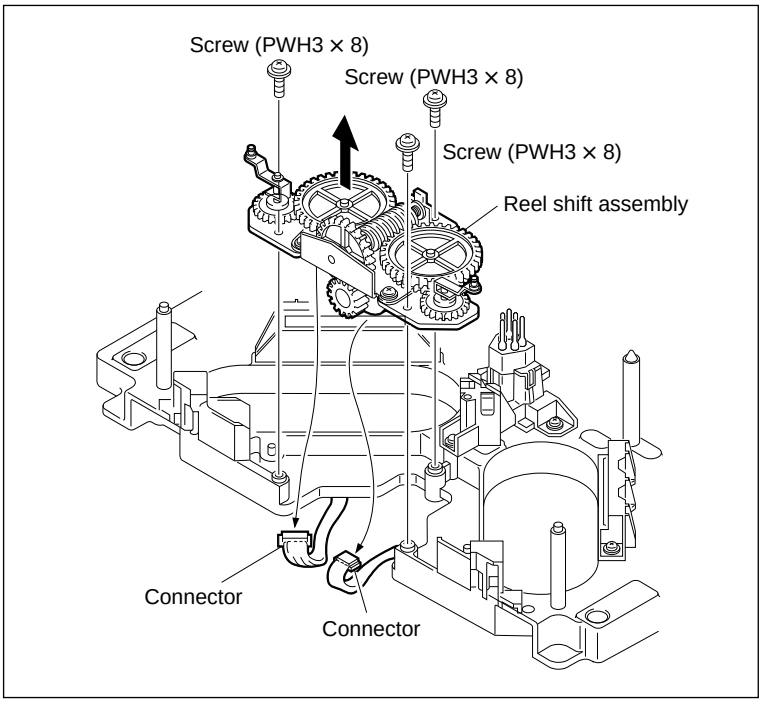
Removal

1. Remove the S and T Reel Shift Plate Assemblies

Remove the S and T reel shift plate assemblies with the reel table assemblies installed.
(Refer to steps 1 through 4 in Section 3-2-3.)

2. Remove the Reel Shift Assembly

(1) Remove the three screws.
(2) Lift the reel shift assembly and disconnect the two connectors.

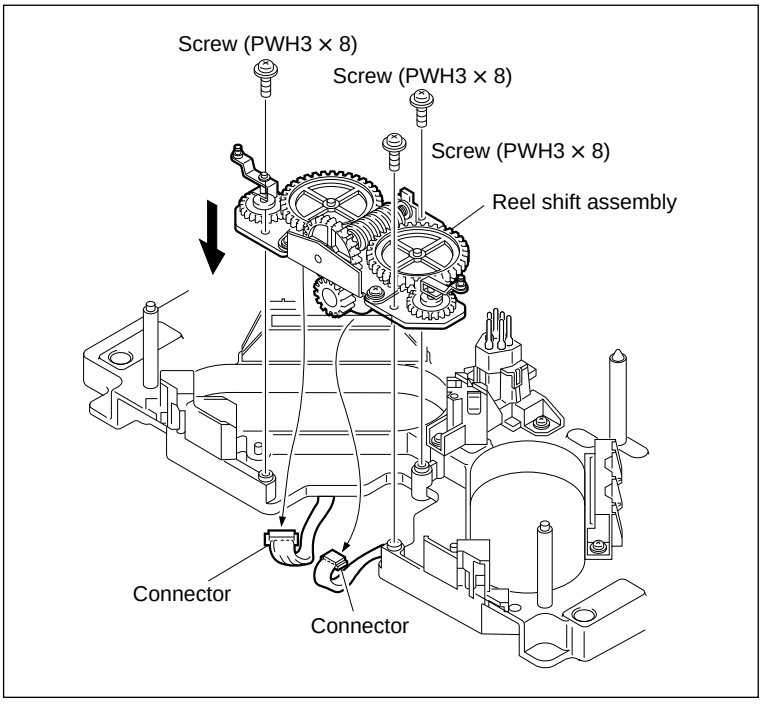


Remove the Reel Shift Assembly

3. Install the Reel Shift Assembly

(1) Connect the two connectors disconnected in step 2 to the reel shift assembly.
(2) Tighten the three screws.

Tightening torque: 8×10^{-2} N•m
(8 kgf•cm)



Install the Reel Shift Assembly

4. Smear Grease

(1) Wipe grease from the worm gear, then clean it.
(2) Smear grease on the worm gear.

5. Install the S and T Reel Shift Plate Assemblies

Refer to steps 8 through 10 in Section 3-2-3.

Adjustment after Replacement

6. Confirm the Cassette Pillar Height

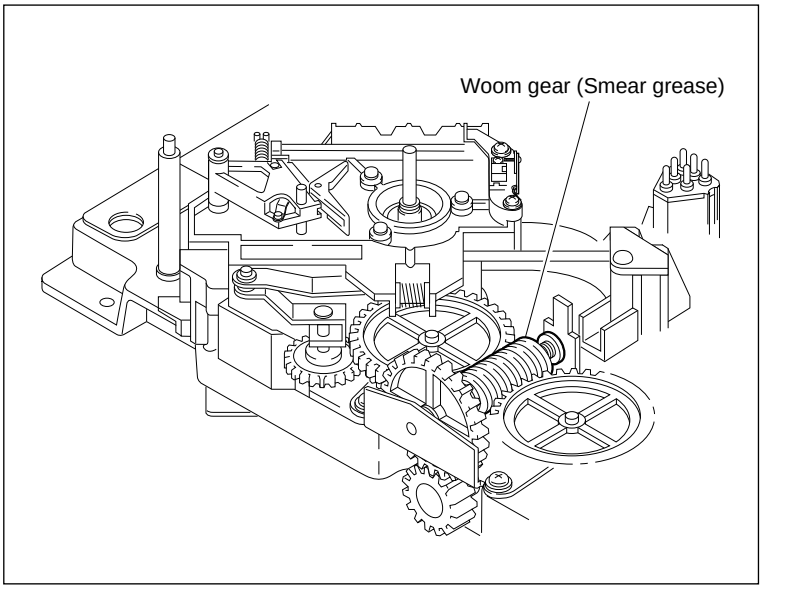
Refer to Section 4-3.

7. Connect the Flat Cable

Refer to step 15 in Section 3-2-3.

8. Confirm the Reel Shift Motor Operation

Refer to Section 6-2.
(SV17: Reel Shift Motor Check)



Smear Grease

3-3. Drum Block

3-3-1. Upper Drum Assembly Replacement

CAUTION

Never touth the rotating drum.
If you touch the drum with hand or screwdriver, it is danger to get hurt by the rapidly spring drum.

- Make sure that the rotating drum completely stops berore cleaning or replacement of parts.
- Never touch the rotating drum during adjusting.

Outline

Replacement

1. Remove the Rotary Head Cleaner Assembly
   (Refer to steps 1 and 2 in Section 3-3-4.)
2. Remove the Brush/Slip Ring Assembly
   (Refer to steps 1 and 2 in Section 3-3-2.)
3. Remove the Height Determining Plate
4. Shift the Air Stabilizer
5. Remove the Upper Drum Assembly
6. Cleaning (Upper Drum Assembly Mounting Surface, Drum Support Mounting Surface, Lower Drum Flange Surface, Tape Running Surface, Lead Surface and Contacting Points)
7. Install the Upper Drum Assembly
8. Cleaning
9. Install the Height Determining Plate
10. Adjust the Air Stabilizer Clearance
11. Install the Brush/Slip Ring Assembly
    (Refer to steps 4 and 5 in Section 3-3-2.)
12. Cleaning (Rotary Heads)
13. Install the Rotary Head Cleaner Assembly
    (Refer to steps 4 through 6 in Section 3-3-4.)

Adjustment after Replacement

14. Confirm the Tape Running (Refer to Section 5-3.)
15. Perform the PG Adjustment (SV1E: Manual PG Adjustment)
    (Refer to Section 6-2.)
16. Confirm the Tracking (Refer to Section 5-4.)
17. Confirm the Drum Head Height (Refer to Section 5-9.)
18. Confirm the CTL/TC Head Height (Refer to Section 5-5.)
19. Adjust the CTL/TC Head Position (Refer to Section 5-7.)
20. Perform the Drum Phase Automatic Adjustment
    (SV0B: RF Switching Position Adjust)
    (Refer to Section 6-5-11.)
21. Perform the Playback System All Adjustment (RF01: PB All Adjust)
    (Refer to Section 6-6-1.)
22. Perform the Recording Current Automatic Adjustment
    (RF05: REC Current Adjust) (Refer to Section 6-6-5.)

Note

When the rotary head tip was worn or damaged, replace the upper drum assembly. It cannot be replaced only head tip.

Basic Knowledge

For except the periodic replacement time, replace the upper drum assembly when a correct RF signal waveform cannot be obtained even if the tracking adjustment is performed.

Tools

• Hexagonal wrench driver (2.5 mm):	7-700-766-04
• Torque screwdriver (6 kg•cm)(JB-5251):	J-6252-510-A
• Torque screwdriver (12 kg•cm)(JB-5252):	J-6252-520-A
• Torque screwdriver's bit (+2 mm, l=75 mm):	J-6323-420-A
• Torque screwdriver's hexagonal bit (d=2.5 mm, l=120 mm):	J-6251-090-A
• Cleaning cloth:	3-184-527-01
• Cleaning fluid:	9-919-573-01
• Upper drum remover:	Supplied with a new repair upper drum

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

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Removal

1. Remove the Rotary Head Cleaner Assembly

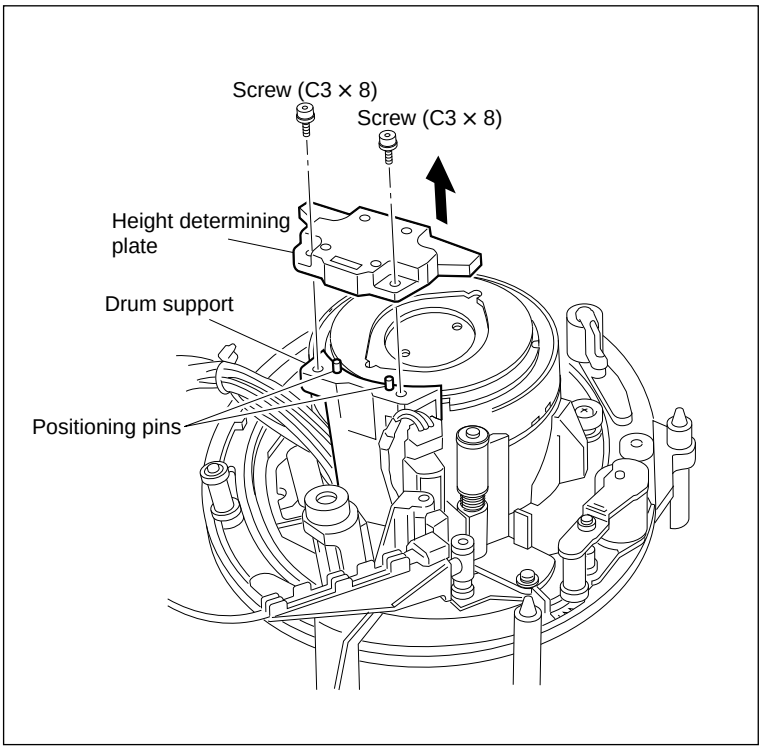
Refer to steps 1 and 2 in Section 3-3-4.

2. Remove the Brush/Slip Ring Assembly

Refer to steps 1 and 2 in Section 3-3-2.

3. Remove the Height Determining Plate

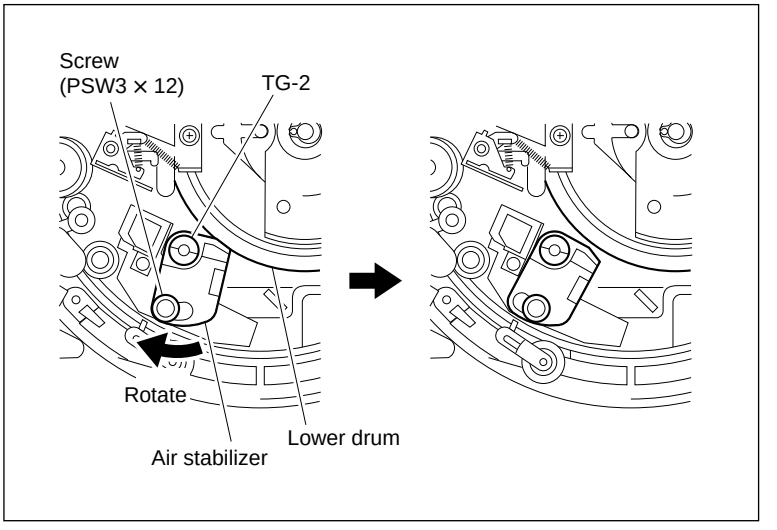
(1) Remove the two screws using a hexagonal wrench driver.
(2) Raise the height determining plate just above, then remove.



Remove the Height Determining Plate

4. Shift the Air Stabilizer

(1) Loosen the air stabilizer fixing screw about 1/2 to 3/4 turn.
(2) Turn the air stabilizer as shown in the direction (indicated by the arrow) with fingers, in which it shifts from the lower drum.
(3) Tighten the air stabilizer fixing screw tentatively.



Shift the Air Stabilizer

5. Remove the Upper Drum Assembly

(1) Insert the hexagonal wrench driver from the screw hole (A) and loosen the screw completely.

Note

The upper drum assembly is fixed with the four fixing screws (C3 × 12) in the screw holes (A). These screws cannot be removed because of stoppers.

(2) Attach the upper drum remover to the two screws holes (B) of the brush-slipring assembly with two screws.

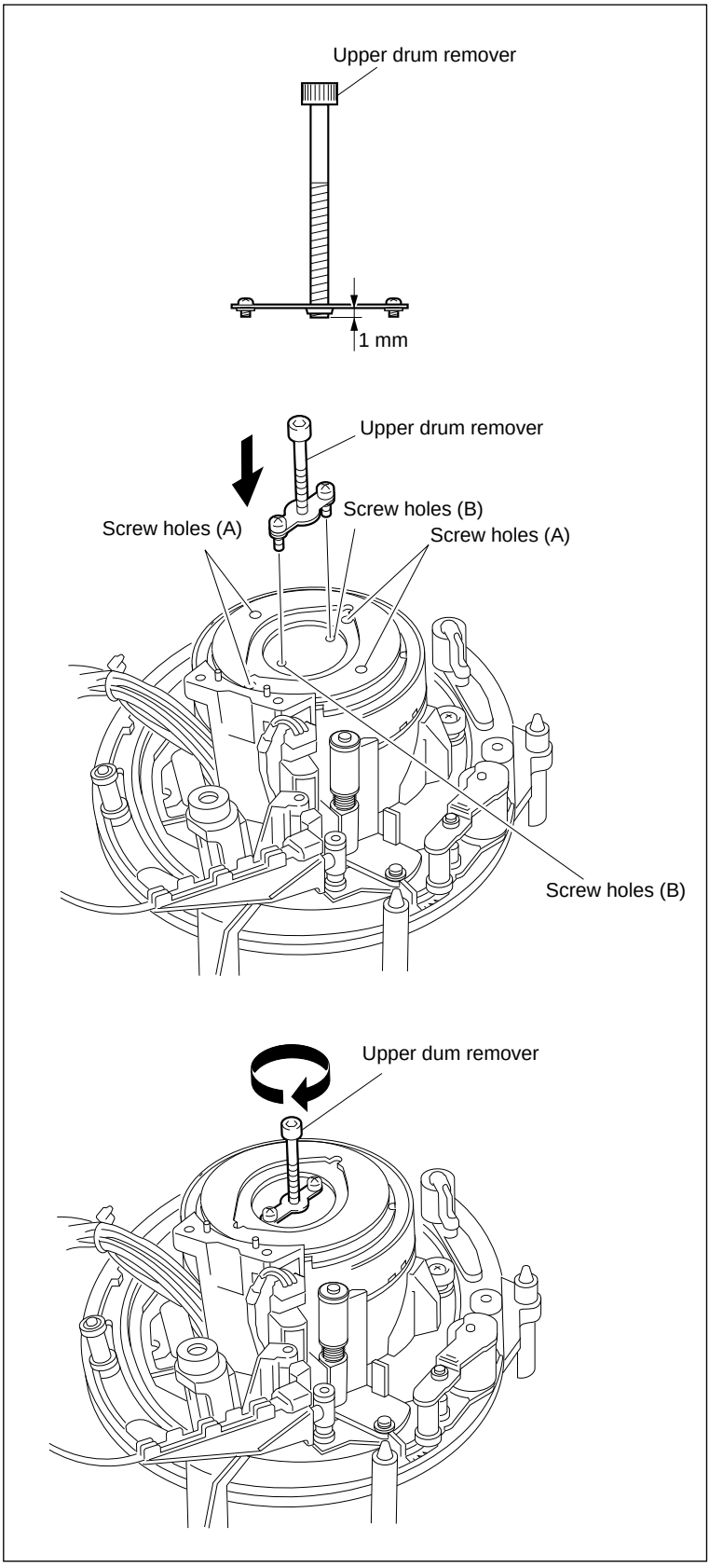
Note

Check that the projection of the hexagon screw from remover's surfase is 1 mm or less.

(3) Turn the hexagon screw of the upper drum remover clockwise by finger. The upper drum will be detached from the shaft of the lower drum slowly.

Note

If the four upper drum securing screws are not loosened completely and the hexagon screw of the upper drum remover is rotated, the lower drum may be damaged.



Remove the Upper Drum Assembly

Installation

Note

The upper drum cover is supplied with the upper drum as repair parts. And it is used for positioning of the upper drum. Never remove it in carelessly, and follow the instructions described below.

6. Cleaning

(1) Clean the portions below with a cleaning cloth moistened with cleaning fluid.
- New upper drum assembly mounting surfaces (shaded portions shown in the figure)
- Lower drum flanges (shaded portions shown in the figure) and edge portion
- Lower drum's tape running surface and lead portion (Refer to Section 2-1-3.)

Note

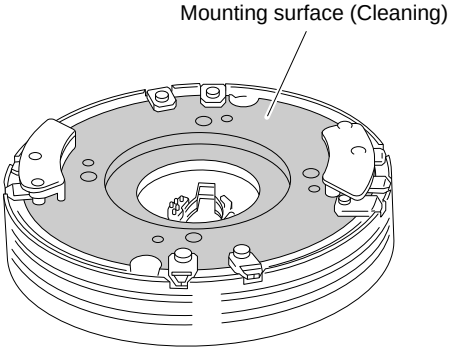
After cleaning, wipe with a dry cleaning cloth.

(2) Wipe the portions shown in figure with a dry cleaning cloth.

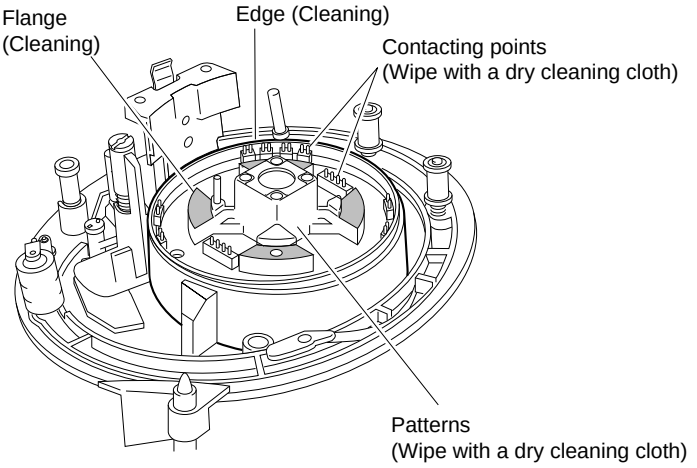
Note

Never apply cleaning fluid to the contacting points and patterns.
- Contacting points of upper drum
- Patterns of upper drum
- Contacting points of lower drum
- Patterns of lower drum

• **Upper drum assembly**



• **Lower drum assembly**



Cleaning

7. Install the Upper Drum Assembly

Note

When replacing the upper drum of this model, it is not necessary to do an eccentricity adjustment of the upper drum.

(1) Adjust the position of the hole (A) on DR-340 board with positioning pin on the upper drum cover. (Fig. 1)
(2) Put the upper drum assembly on the central shaft of the lower drum gently while keeping the state of (1).

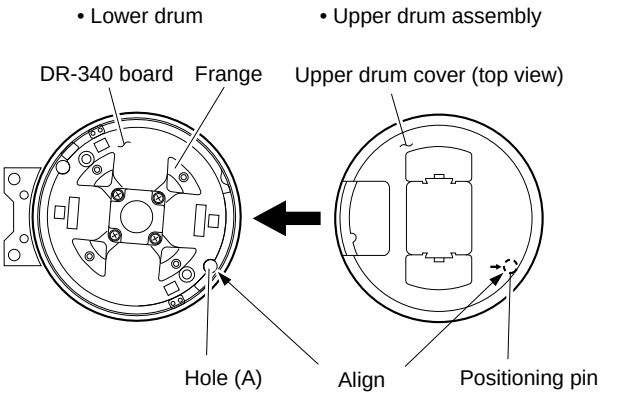
Notes

1. Never hold the claws of the upper drum cover when installing the upper drum assembly.
2. Be careful not to touch the AT head, peripheral tape guides and drum support when installing the upper drum assembly.
3. Do not turn the upper drum while the upper drum cover is installed.

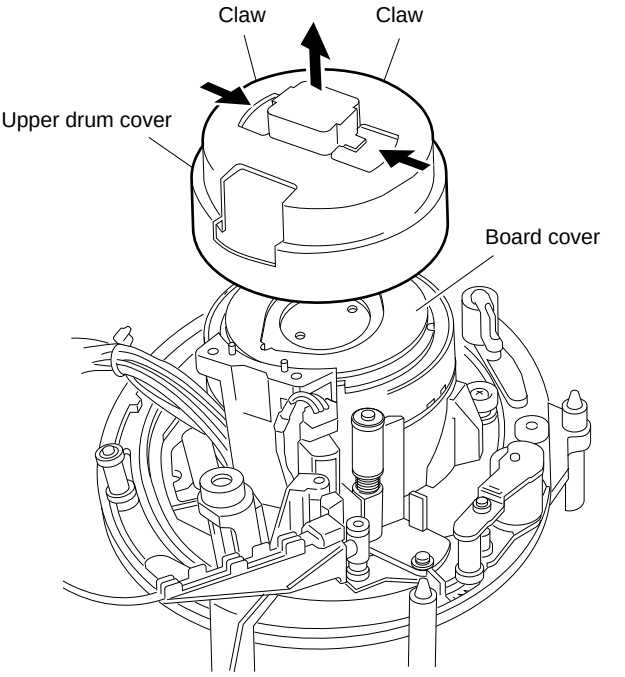
(3) Press the claws of the upper drum cover in the direction indicated by the arrows and raise the upper drum cover up, then remove it.
(4) Push the central portion of the upper drum down by finger, and place the upper drum on the flange of the lower drum surely.
(5) Tighten the four screws in the sequence shown on the board cover gradually while keeping the state of (4).
Tightening torque : 39.2×10^{-2} N•m
(4.0 kgf•cm)

(6) Tighten the four screws in the same sequence as in step (5) using a torque screwdriver.
Tightening torque : 78.5×10^{-2} N•m
(8.0 kgf•cm)

<Fig.1>



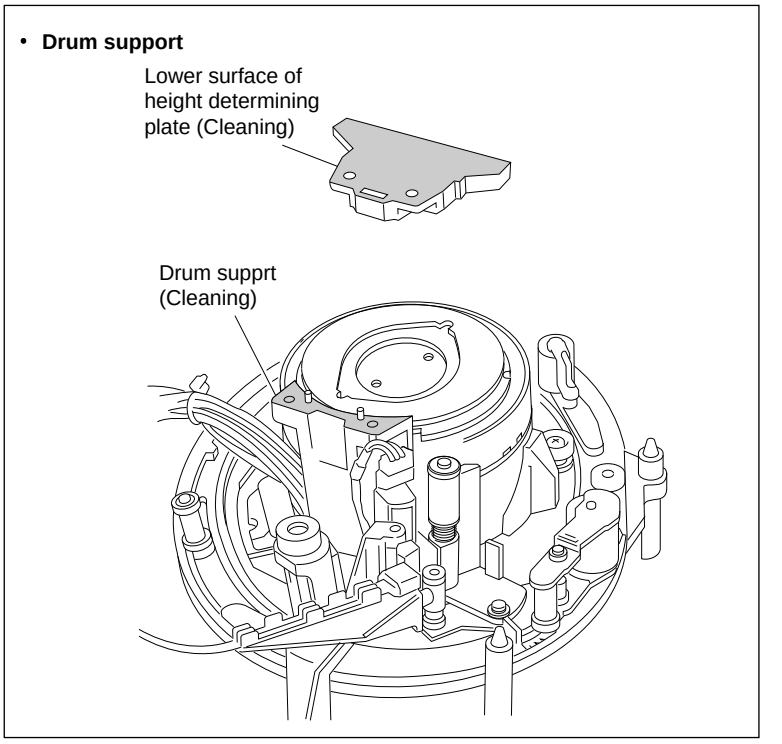
• **Remove the upper drum cover**



Install the Upper Drum Assembly

8. Cleaning

Clean the lower surface (shaded portion in the figure) of the height determining plate and the upper surface of the drum support (shaded portion in the figure) with a soft cloth.

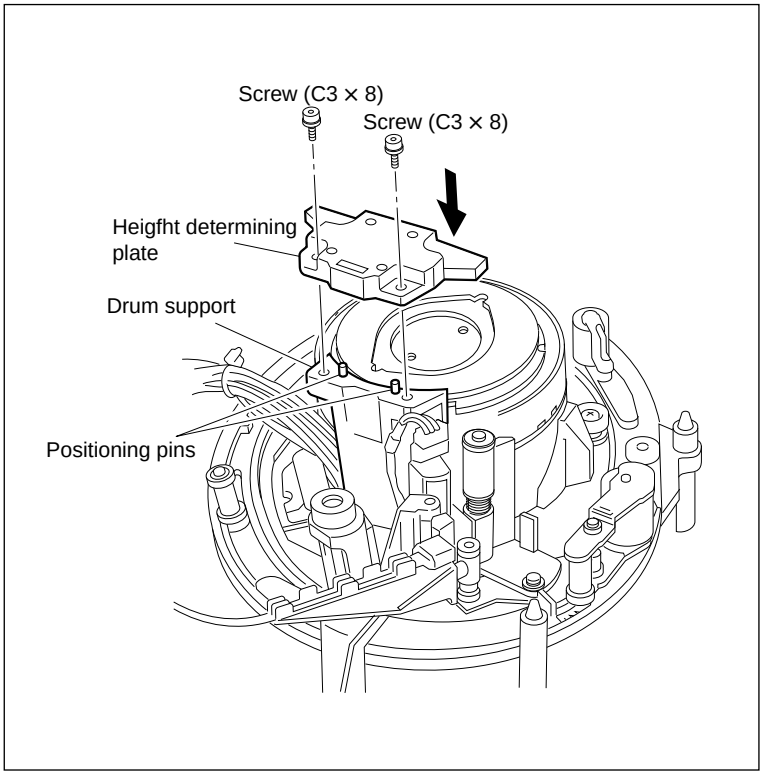


Cleaning

9. Install the Height Determining Plate

(1) Install the height determining plate so that the positioning pins of the drum support are put into the holes of the height determining plate.
(2) Tighten the two screws alternately and gradually.

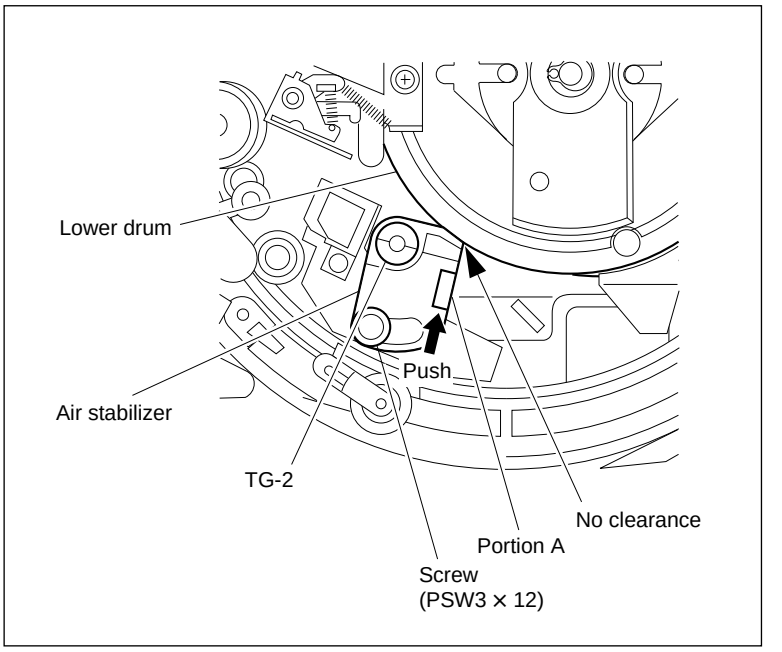
Tightening torque: 78.4×10^{-2} N•m
(8 kgf • cm)



Install the Height Determining Plate

10. Adjust the Air Stabilizer Clearance

(1) Loosen the air stabilizer fixing screw about 1/2 to 3/4 turn.
(2) Tighten the screw while pushing the portion A by finger and press the air stabilizer against the lower drum.
(3) Confirm that no clearance between exists the lower drum and the air stabilizer.



Adjust the Air Stabilizer Clearance

11. Install the Brush/Slip Ring Assembly

Refer to steps 4 and 5 in Section 3-3-2.

12. Cleaning

Clean the portion below.

(1) Rotary heads (Refer to Section 2-1-2.)

CAUTION

After cleaning, wipe with a dry cleaning cloth.

13. Install the Rotary Head Cleaner Assembly

Refer to steps 4 through 6 in Section 3-3-4.

Adjustment after Replacement

14. Confirm the Tape Running

Refer to Section 5-3.

15. Perform the PG Adjustment

Refer to Section 6-2.
(SV1E: Manual PG Adjustment)

16. Confirm the Tracking

Refer to Section 5-4.

17. Confirm the Drum Head Height

Refer to Section 5-9.

18. Confirm the CTL/TC Head Height

Refer to Section 5-5.

19. Adjust the CTL/TC Head Position

Refer to Section 5-7.

20. Perform the Drum Phase Automatic Adjustment

Refer to Section 6-5-11.
(SV0B: RF Switching Position Adjust)

21. Perform the Playback System All Adjustment

Refer to Section 6-6-1.
(RF01: PB All Adjust)

22. Perform the Recording Current Automatic Adjustment

Refer to Section 6-6-5.
(RF05: REC Current Adjust)

3-3-2. Brush/Slip Ring Assembly Replacement

Outline

Replacement

1. Disconnect the Flexible Board (CN2/SE-358 Board)
2. Remove the Brush/Slip Ring Assembly
3. Cleaning (DR-341 Board's Contacting Points and Brush/Slip Ring Assembly Mounting Surface)
4. Install the Brush/Slip Ring Assembly
5. Connect the Flexible Board (CN2/SE-358 Board)

Note

When the brush or slip ring was worn or damaged, replace the brush/slip ring assembly. It cannot be replaced only brush or slip ring.

Tools

- Torque screwdriver (6 kg•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l=75 mm): J-6323-420-A
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

Removal

1. Disconnect the Flexible Board

Disconnect the flexible board from connector CN2 on the SE-358 board.

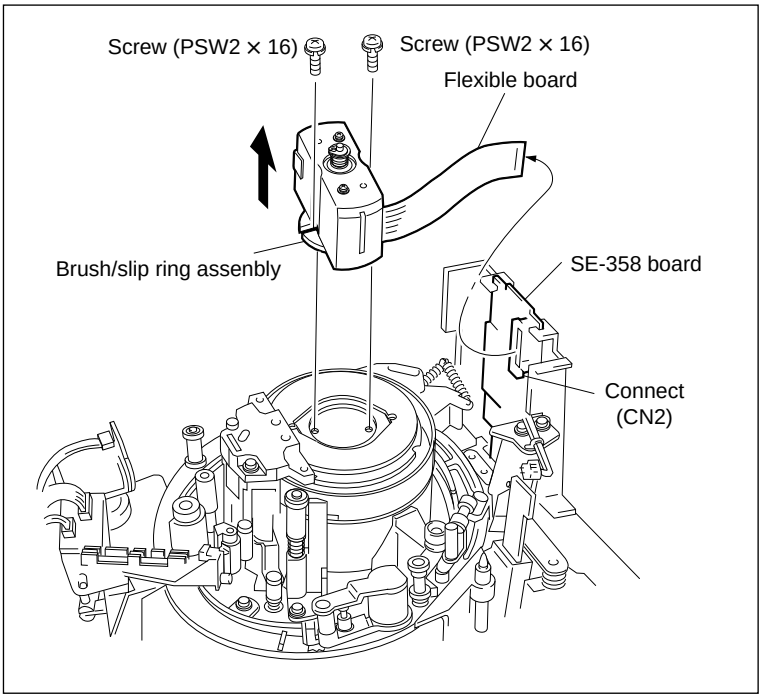
2. Remove the Brush/Slip Ring Assembly

(1) Remove the two screws, then remove the brush/slip ring assembly.

CAUTION

Do not apply excessive force to the brush/slip ring assembly at that time.

(2) Turn the brush/slip ring assembly upside down, and take out the two screws.



Remove the Brush/Slip Ring Assembly

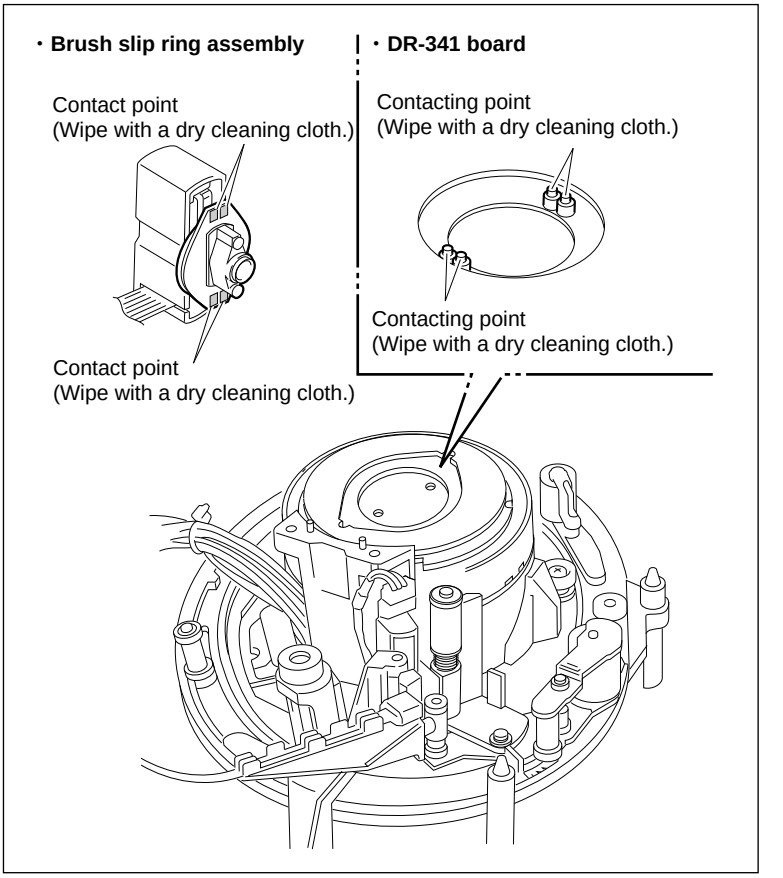
Installation

3. Cleaning

Wipe the brush/slip ring assembly mounting surface (shaded portion in the figure) and the DR-341 board contacting points with a dry cleaning cloth.

CAUTION

Do not apply cleaning fluid to the contacting points.



Cleaning

4. Install the Brush/Slip Ring Assembly

(1) Insert the two screws taken out in (2) of step 2 into the screw holes of the brush/slip ring assembly.
(2) Install the brush/slip ring assembly in the direction shown in the figure.
(3) Tighten the two screws alternately and gradually while pushing both sides of the flange equally from above.

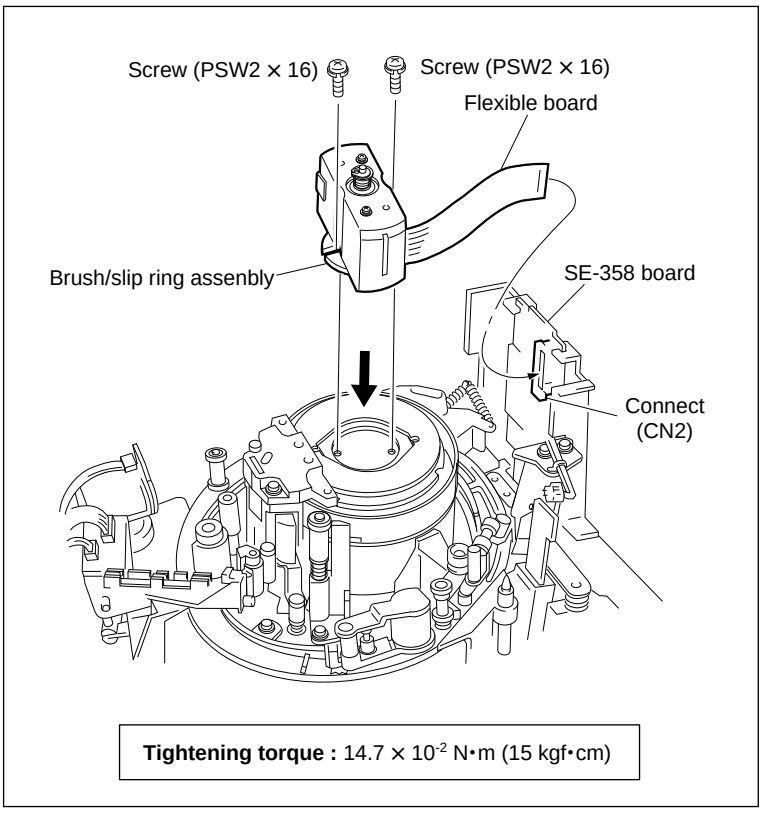
Tightening torque: 14.7×10^{-2} N•m
(1.5 kgf•cm)

CAUTION

Never apply excessive force to the cover.

5. Connect the Flexible Board

Connect the flexible board into connector CN2 on the SE-358 board.



Install the Brush/Slip Ring Assembly

3-3-3. Drum Assembly Replacement

Outline

Replacement

1. Remove the Rotary Head Cleaner Assembly
   (Refer to steps 1 and 2 in Section 3-3-4.)
2. Disconnect the Flexible Board (CN2/SE-358 Board)
3. Release the Air Stabilizer (Refer to step 4 in Section 3-3-1.)
4. Remove the Drum Assembly
5. Cleaning
   (Drum Assembly Mounting Surfaces and Chassis Mounting Surfaces)
6. Install the Drum Assembly
7. Adjust the Aier Stabilizer Clearance (Refer to Step 10 in Section 3-3-1.)
8. Connect the Flexible Board (CN241/HN-223 Board)
9. Cleaning
   (Rotary Heads, Upper Drum's Tape Running Surface and
   Lower Drum's Tape Running Surface)
10. Install the Rotary Head Cleaner Assembly
    (Refer to steps 4 through 6 in Section 3-3-4.)

Adjustment after Replacement

11. Confirm the Drum Motor Operation (SV16: Drum Motor Check)
    (Refer to Section 6-2.)
12. Adjust the Tape Running (Refer to Section 5-3.)
13. Perform the PG Adjustment (SV1E: Manual PG Adjustment)
    (Refer to Section 6-2.)
14. Adjust the Tracking (Refer to Section 5-4.)
15. Confirm the Drum Head Height (Refer to Section 5-9.)
16. Adjust the CTL/TC Head Height (Refer to Section 5-5.)
17. Adjust the CTL/TC Head Azimuth (Refer to Section 5-6.)
18. Adjust the CTL/TC Head Position (Refer to Section 5-7.)
19. Confirm the Tape Running (Refer to Section 5-3.)
20. Perform the Drum Phase Automatic Adjustment
    (SV0B: RF Switching Position Adjust) (Refer to Section 6-5-11.)
21. Perform the Playback System All Adjustment (RF01: PB All Adjust)
    (Refer to Section 6-6-1.)
22. Perform the Recording Current Automatic Adjustment
    (RF05: REC Current Adjust) (Refer to Section 6-6-5.)

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Note

Be careful not to damage the CTL/TC head and peripheral tape guides when removing or installing the drum assembly.

Basic knowledge

For except the periodic replacement time, replace the drum assembly in the following cases.

- The upper or lower drum's tape running surface is damaged and cannot be repaired.
- A correct RF signal waveform cannot be obtained due to the worn upper or lower drum even if the tracking adjustment is performed.
- The performance of the unit deteriorates because of the noise or jitter caused by the bearing life.

Tools

- Hexagonal wrench driver (2.5 mm): 7-700-766-04
- Torque screwdriver (6 kg•cm)(JB-5251): J-6252-510-A
- Torque screwdriver (12 kg•cm)(JB-5252): J-6252-520-A
- Torque screwdriver's hexagonal bit (d=2.5 mm, l=120 mm): J-6251-090-A
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

Removal

1. Remove the Rotary Head Cleaner Assembly

Refer to steps 1 and 2 in Section 3-3-4.

2. Disconnect the Flexible Board

Disconnect the flexible board from connector CN2 on the SE-358 board.

3. Release the Air Stabilizer

Refer to steps 4 in Section 3-3-1.

4. Remove the Drum Assembly

(1) Turn the upper drum assembly with fingers counterclockwise and align the screw hole of the upper drum assembly with the fixing screw position on the lower drum assmbly.

Note

The drum assembly is fixed to the chassis with the three fixing screws (C3 x 8) in the screw hole.

(2) Loosen the screw fully using a hexagonal wrench driver.

Note

These screws cannot be removed because of stoppers.

(3) Loosen other two screws fully in the same way as in steps (1) and (2).

(4) Raise the drum assembly just above and remove the harness from the harness holder at the bottom.

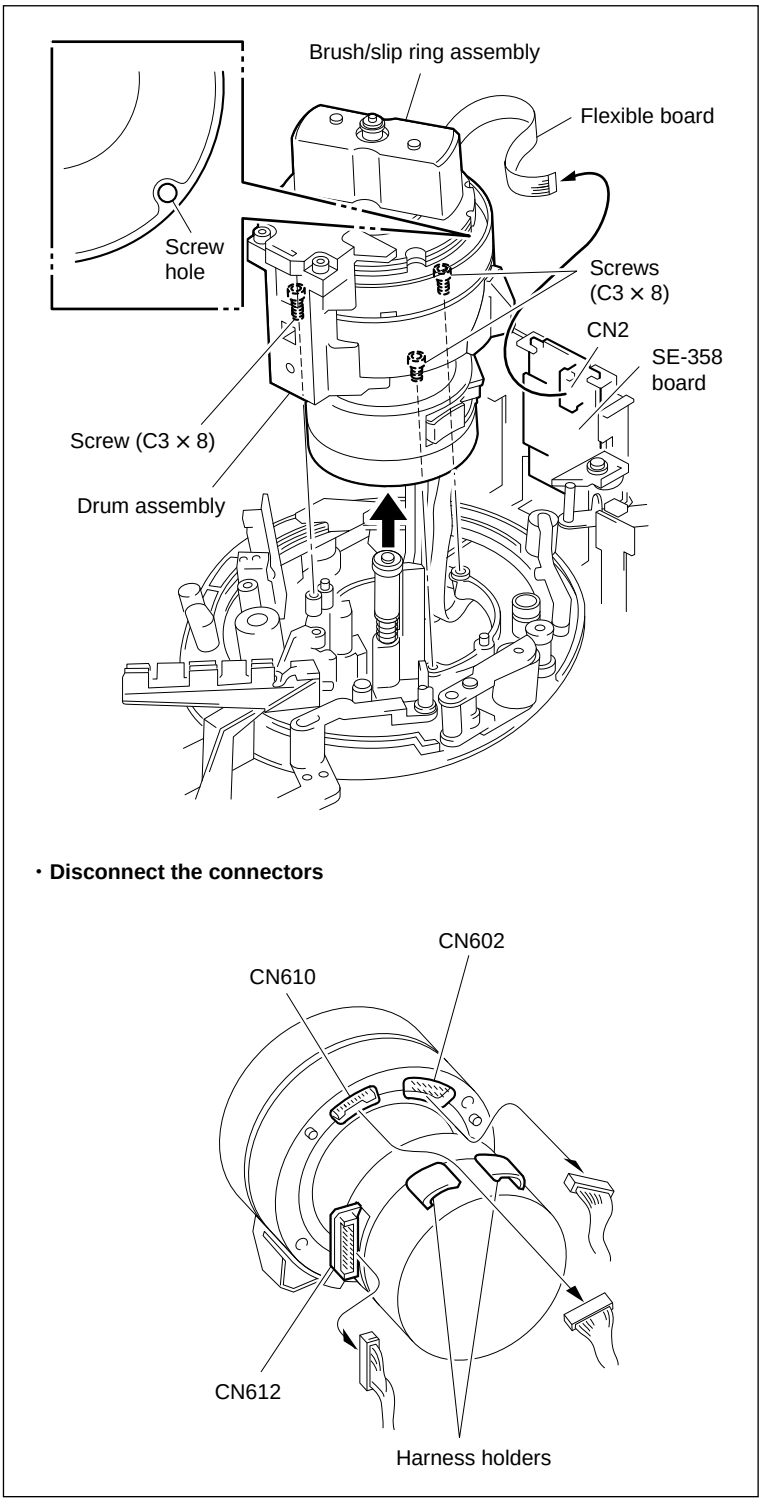
CAUTION

Be careful not to raise the drum assembly by holding the brush/slip ring assembly.

(5) Disconnect three connectors CN602, CN610 and CN612 in the state of step (4).
The drum assembly can then be removed.

CAUTION

Be careful not to touch the CTL/TC head and peripheral tape guides when removing the drum assembly.



Remove the Drum Assembly

Installation

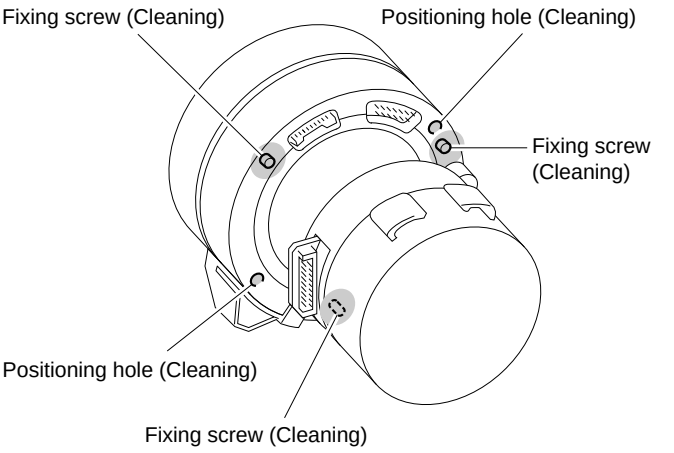
5. Cleaning

Clean the new drum assembly mounting surfaces and chassis mounting surfaces with a cleaning cloth moistened with cleaning fluid.

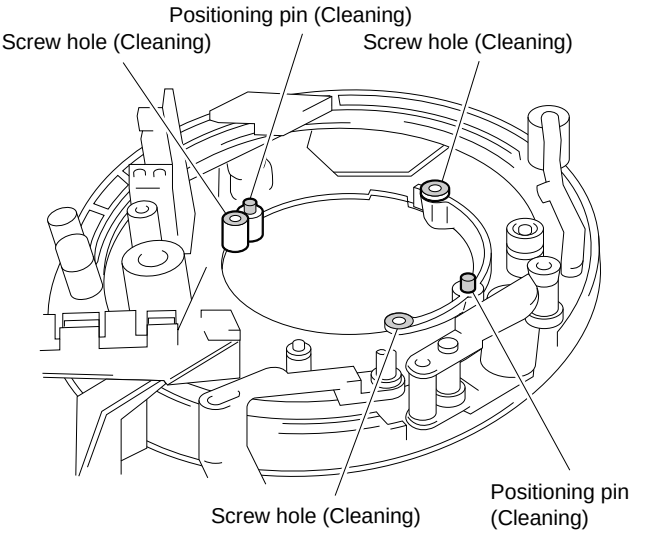
CAUTION

After cleaning, wipe with a dry cleaning cloth.

・Drum assembly



・Chassis



Cleaning

6. Install the Drum Assembly

(1) Hold the drum assembly as shown in the figure and connect the three connectors disconnected in (5) of step 4.

CAUTION

1. Hold the height determining plate and the drum support at that time. Be careful not to hold the upper drum and the brush/slip ring assembly.
2. Pay attention to the direction of the connectors.

(2) Fix the harness by a harness holder as shown in the figure.

(3) Align the two positioning holes of the drum assembly with the two positioning pin of the chassis while passing the harness under the chassis.

CAUTION

1. Be careful not to touch the CTL/TC head and tape guide at that time.
2. Be careful not to put the harness between the lower drum and the chassis.

(4) Confirm that the drum assembly is firmly inserted into the positioning pins.

(5) Rotate the inner drum assembly manually counterclockwise and align the upper drum assembly holes with the fixing screw positions.

(6) Tighten the screw tentatively.

(7) Tighten other two screws tentatively in the same way as in steps (5) and (6).

(8) Tighten the three screws each by two or three turns in the order of counterclockwise.

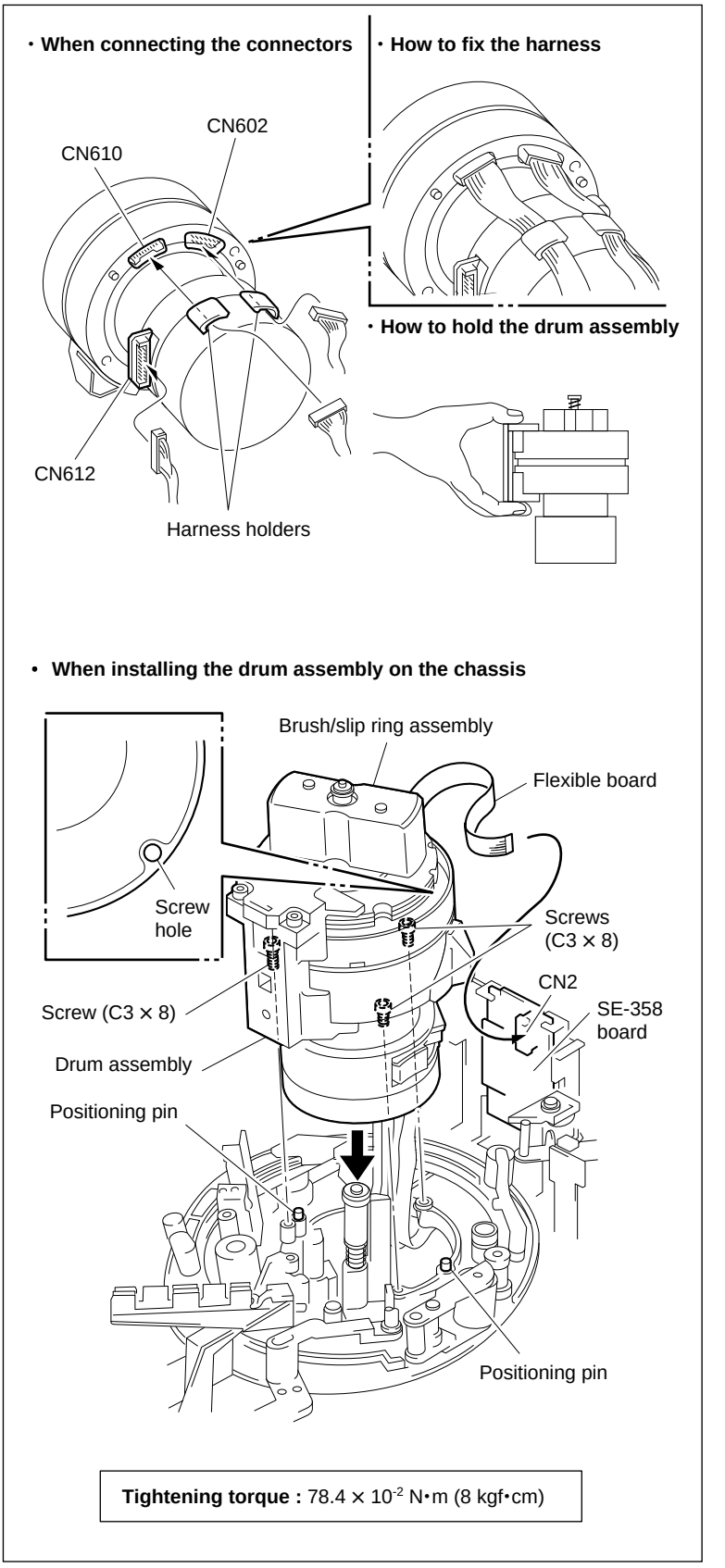
Tightening torque: 78.4×10^{-2} N•m
(8 kgf•cm)

7. Adjust the Air Stabilizer Clearance

Refer to step 10 in Section 3-3-1.

8. Connect the Flexible Board

Connect the flexible board into connector CN241 on the HN-223 board, then lock.



Install the Drum Assembly

9. Cleaning

Clean the portion below.

(1) Rotary heads (Refer to Section 2-1-2.)

(2) Lower drum's tape running surface (Refer to Section 2-1-4.)

CAUTION

After cleaning, wipe with a dry cleaning cloth.

10. Install the Rotary Head Cleaner Assembly

Refer to steps 4 through 6 in Section 3-3-4.

Adjustment after Replacement

11. Confirm the Drum Motor Operation

Refer to Section 6-2.
(SV16: Drum Motor Check)

12. Adjust the Tape Running

Refer to Section 5-3.

13. Perform the PG Adjustment

Refer to Section 6-2.
(SV1E: Manual PG Adjustment)

14. Adjust the Tracking

Refer to Section 5-4.

15. Confirm the Drum Head Height

Refer to Section 5-9.

16. Adjust the CTL/TC Head Height

Refer to Section 5-5.

17. Adjust the CTL/TC Head Azimuth

Refer to Section 5-6.

18. Adjust the CTL/TC Head Position

Refer to Section 5-7.

19. Confirm the Tape Running

Refer to Section 5-3.

20. Perform the Drum Phase Automatic Adjustment

Refer to Section 6-5-11.
(SV0B: RF Switching Position Adjust)

21. Perform the Playback System All Adjustment

Refer to Section 6-6-1. (RF01: PB All Adjust)

22. Perform the Recording Current Automatic Adjustment

Refer to Section 6-6-5. (RF05: REC Current Adjust)

3-3-4. Cleaning Roller and Rotary Head Cleaner Assembly Replacement

Outline

Replacement

1. Remove the Harness (CN851/PD-35 Board)
2. Remove the Rotary Head Cleaner Assembly
3. Replace the Cleaning Roller
4. Install the Rotary Head Cleaner Assembly
5. Adjust the Cleaning Roller Position
6. Install the Harness (CN851/PD-35 Board)

Adjustment after Replacement

7. Confirm the Cleaning Solenoid Operation
   (SV1B: Cleaning Roller Solenoid Check) (Refer to Section 6-2.)

Note

When the cleaning roller is replaced, it is recommended to replace the CR spacer at the same time.

- CR spacer : 3-182-765-02

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

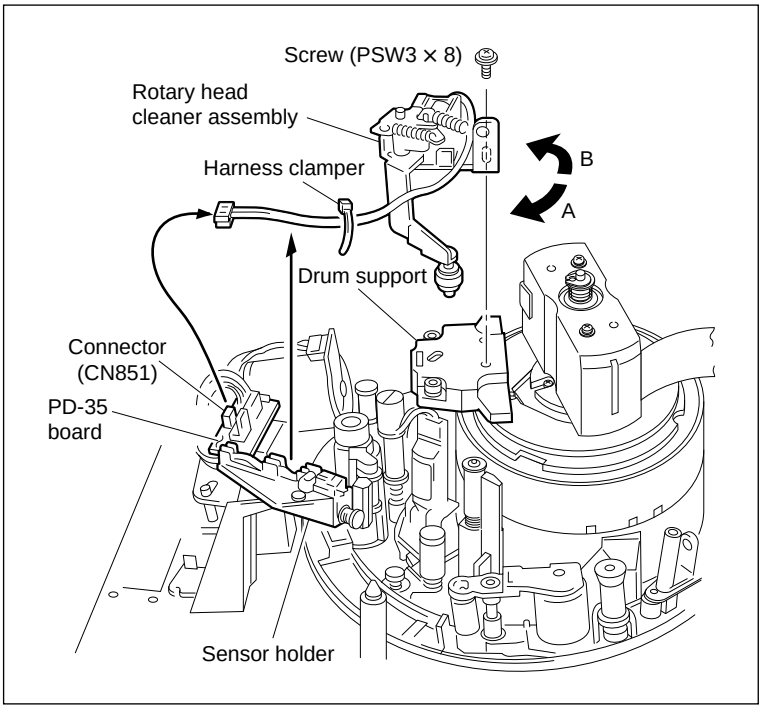
Removal

1. Remove the Harness

(1) Disconnect the connector from connector CN851 on the SE-358 board.
(2) Cut the harness clamper.
(3) Remove the harness from the sensor holder.

2. Remove the Rotary Head Cleaner Assembly

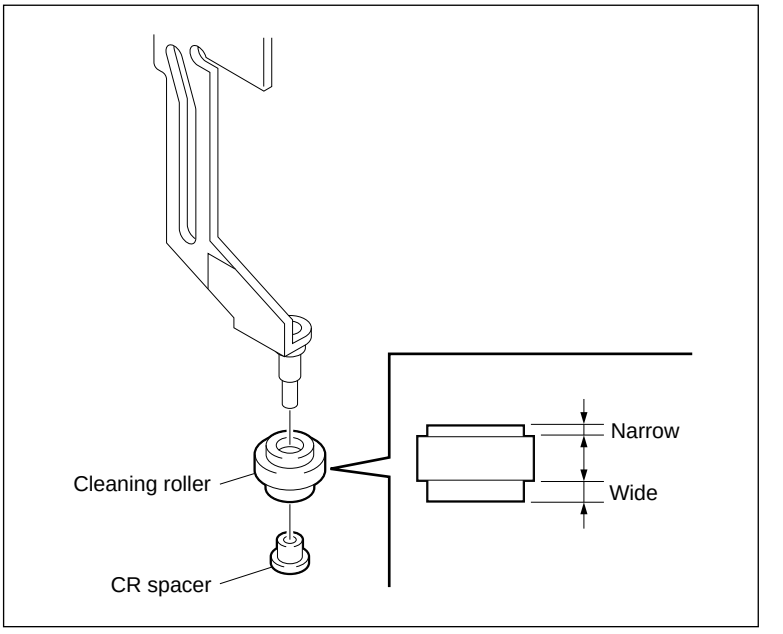
Remove the screw, shift the rotary head cleaner assembly in the direction indicated by the arrow A, and remove it from the drum support.



Remove/Install the Rotary Head Cleaner Assembly

3. Replace the Cleaning Roller

(1) Remove the CR spacer, and remove the cleaning roller.
(2) Pass a new cleaning roller through the shaft as shown in the figure. Then fix the cleaning roller by the CR spacer.
(3) Move the cleaning roller in the vertical direction.
At this time, confirm that there is no vertical play.



Replace the Cleaning Roller

Installation

4. Install the Rotary Head Cleaner Assembly

(1) Insert the cleaning roller from the clearance between the drum support and full erase head.
(2) Align the two pins of the rotary head cleaner assembly with the two holes of the drum support.
(3) Tighten the screw while moving the rotary head cleaner assembly in the direction indicated by the arrow B.

5. Adjust the Cleaning Roller Position

(1) Check that the cleaning roller does not come in contact with the upper drum as visual. (Spec.1)

If the cleaning roller comes in contact with the upper drum, bend the portion B of the video head cleaner sub assembly in the direction of the arrow C.

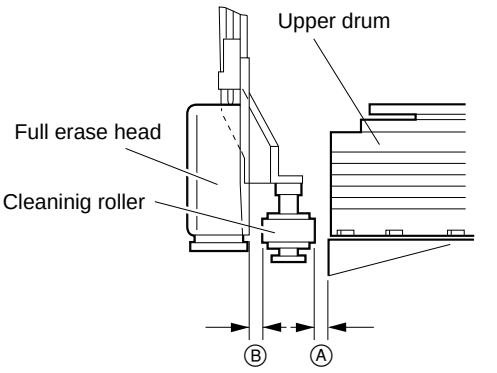
(2) Check that the cleaning roller does not come in contact with the terminal of the full erase head as visual. (Spec.2)

If the cleaning roller comes in contact with the terminal of the full erase head, bend the portion B of the video head cleaner sub assembly in the direction of the arrow D.

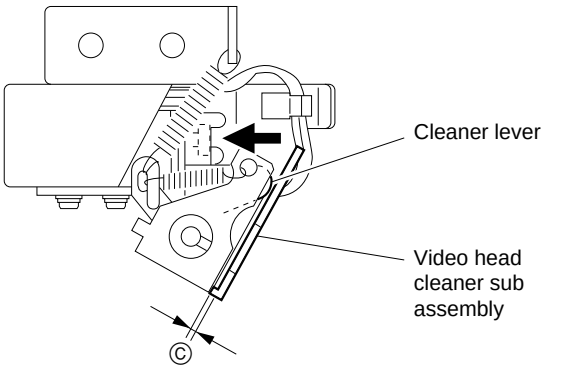
(3) Press the iron core in the direction of the arrow. At that time, check that clearance exists between the cleaner lever and the video head cleaner sub assembly. (Spec.3)

If clearance does not exist, bend the portion B of the video head cleaner sub assembly in the direction of the arrow D.

(4) Repeat steps (1) through (3) above until the specifications 1 through 3 are satisfied.

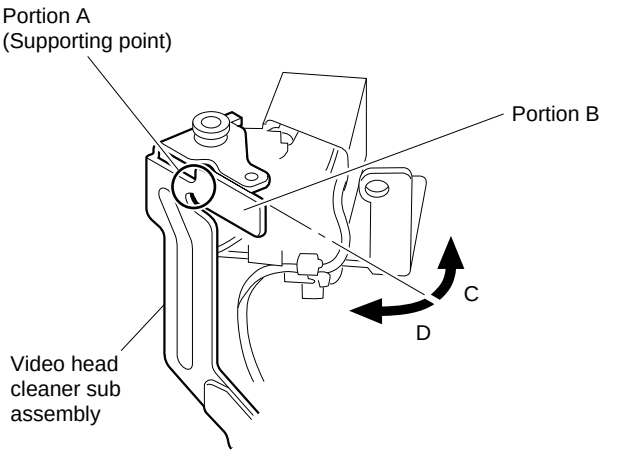


Spec.1 : Ⓐ = Clearance exists.
Spec.2 : Ⓑ = Clearance exists.



Spec.3 : Ⓒ = Clearance exists.

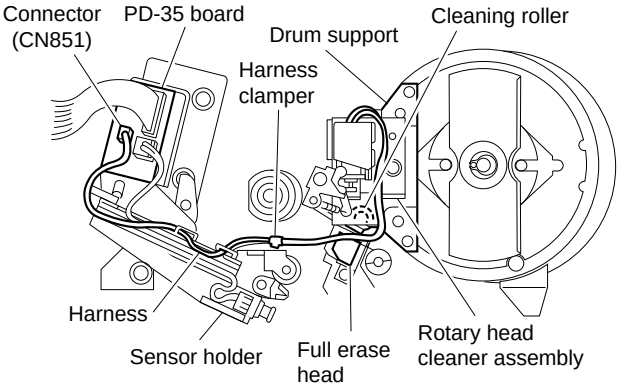
・When the specifications are not satisfied:



Cleaning Roller Position Adjustment

6. Install the harness

(1) Fix the harness to the sensor holder position shown in the figure.
(2) Connect a connector into connector CN851 on the PD-35 board.
(3) Fix the harness using a harness clamper (or the equivalent).



Install the Harness

Adjustment after Replacement

7. Confirm the Cleaning Solenoid Operation

Refer to Section 6-2.
(SV1B: Cleaning Roller Solenoid Check)

3-4. Drum Entrance Side Block

3-4-1. S Tension Regulator Assembly Replacement

Outline

Replacement

1. Put the Unit into the Unthreading End Mode (Refer to step 2 in Section 3-1-3.)
2. Remove the S Tension Regulator Assembly
3. Install the S Tension Regulator Assembly

Adjustment after Replacement

4. Adjust the Tape Running (Refer to Section 5-3.)

Note

The component parts of the S tension regulator assembly are adjusted precisely in the factory, then replace the whole assembly (A-8277-408-) in the field.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)
5. Remove the MA-83 board and the DR-327 board. (Refer to Section 1-8.)

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Removal

1. Put the Unit into the Unthreading End Mode

Refer to step 2 in Secrtion 3-1-3.

2. Remove the S Tension Regulator Assembly

(1) Disconnect the connector CN18 on the MS-54 board.

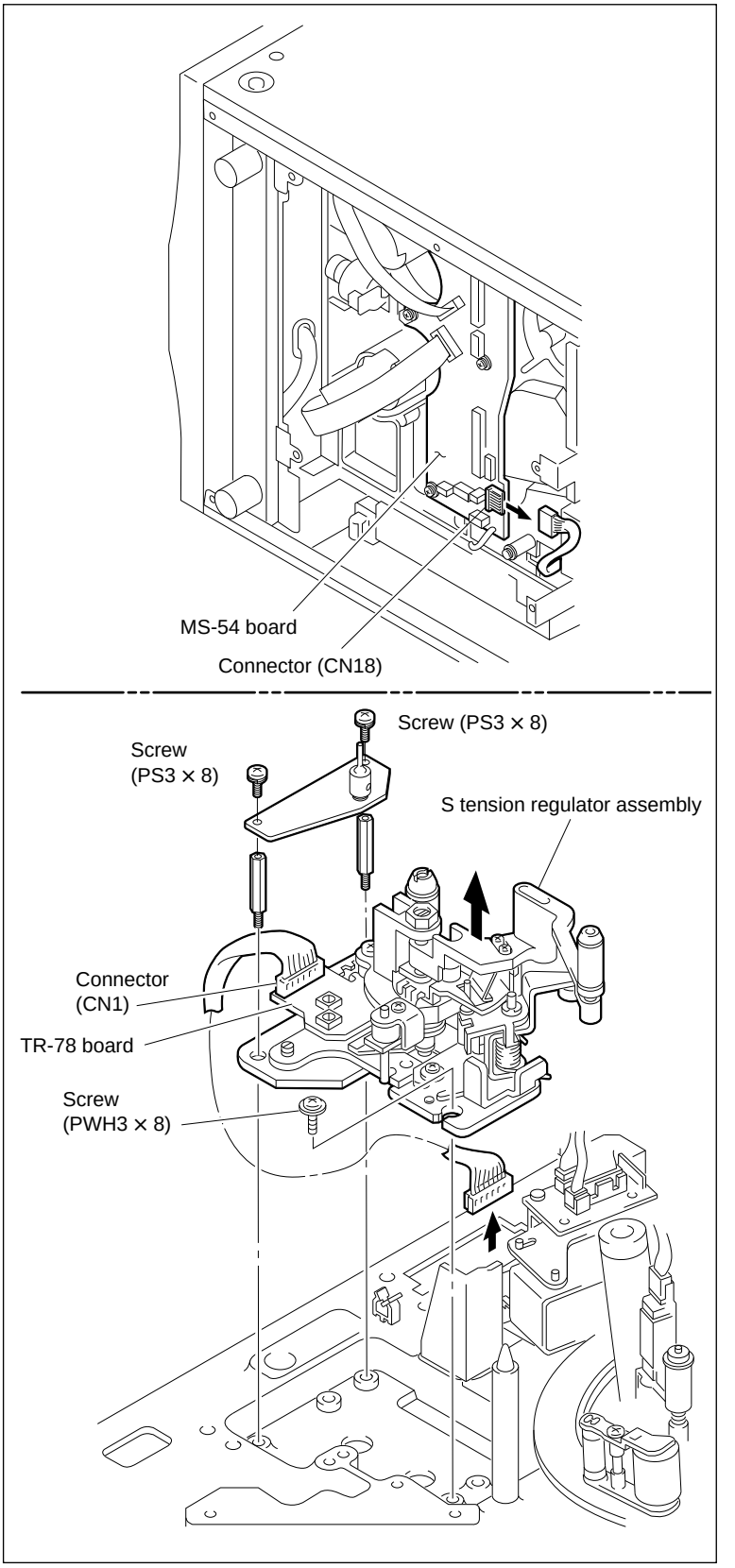
(2) Remove the two screws (PS3 × 8), and remove the L cassette support plate (S) assembly.

(3) Remove the screw and two L cassette support spacer (S), and remove the S tension regulator assembly.

Note

Never disconnect connector CN1 on the TR-78 board.

If so, the adjustment the S tension regulator assembly get out of order and can not be repaired



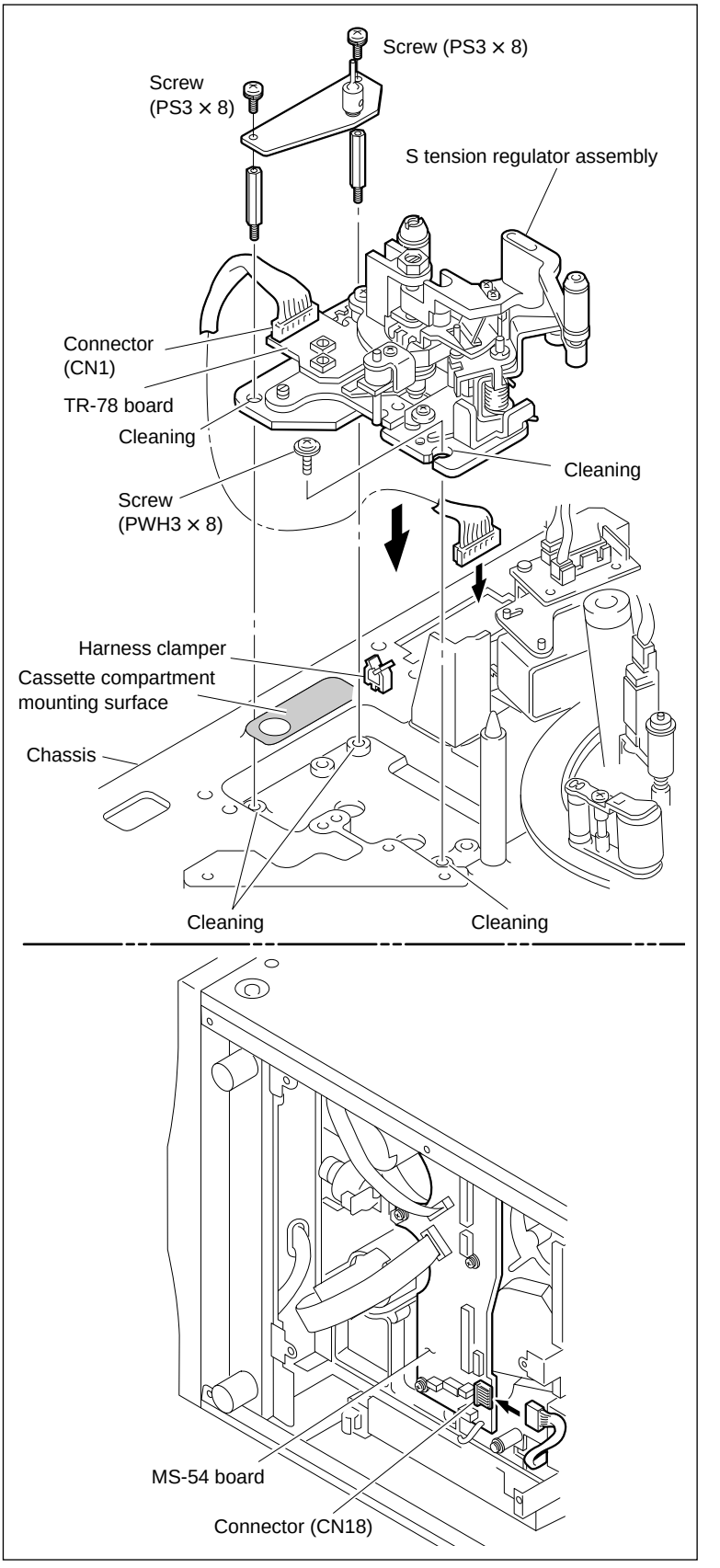
Remove the S Tension Regulator Assembly

Installation

3. Install the S Tension Regulator Assembly

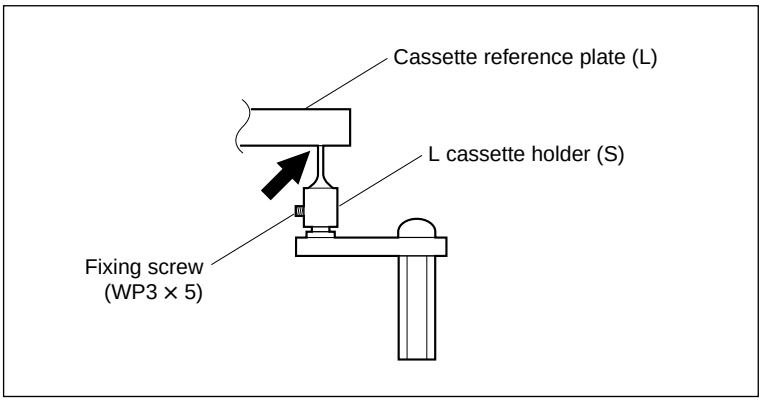
(1) Clean the mounting surfaces of the S tension regulator assembly and the chassis with a cleaning cloth moistened with cleaning fluid.
(2) Set the S tension regulator assembly, and tighten the screw (PWH3 × 8) and two L cassette support spacer (S).
(3) Connect the connector into CN18 on the MS-54 board.
(4) Fasten the harness with the harness clamper.
(5) Check that the harness is not on the cassette compartment mounting surface (shaded portion in the figure).
(6) Secure the L cassette support plate (S) assembly to the L cassette support spacer (S) with the two screws (P3 × 8).

Tightening torque : 78.5×10^{-2} N•m
(8 kgf.cm)



Install the S Tension Regulator Assembly

(7) Refer to section 4-2, and set the cassette reference plate (L) (MW-088). As shown in the right diagram, with the tip of the L cassette holder (S) touching the back of the reference plate lightly, tighten the fixing screw. At this time, make sure that the part indicated by the arrow in the diagram is not floating and there is no clearance.



Install the S Tension Regulator Assembly

Adjustment after Replacement

4. Adjust the Tape Running

Refer to Section 5-3.

3-4-2. Tape Cleaner Replacement

CAUTION

Do not touch the tape cleaner with bare hands.
The tape cleaner has a sharp edge.

Outline

Replacement

1. Remove the Tape Cleaner
2. Install the Tape Cleaner

Note

Adjustment after the tape cleaner replacement is not required.

Tools

- Torque screwdriver (6 kg•cm)(JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l=75 mm): J-6323-420-A

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

Removal

1. Remove the Tape Cleaner

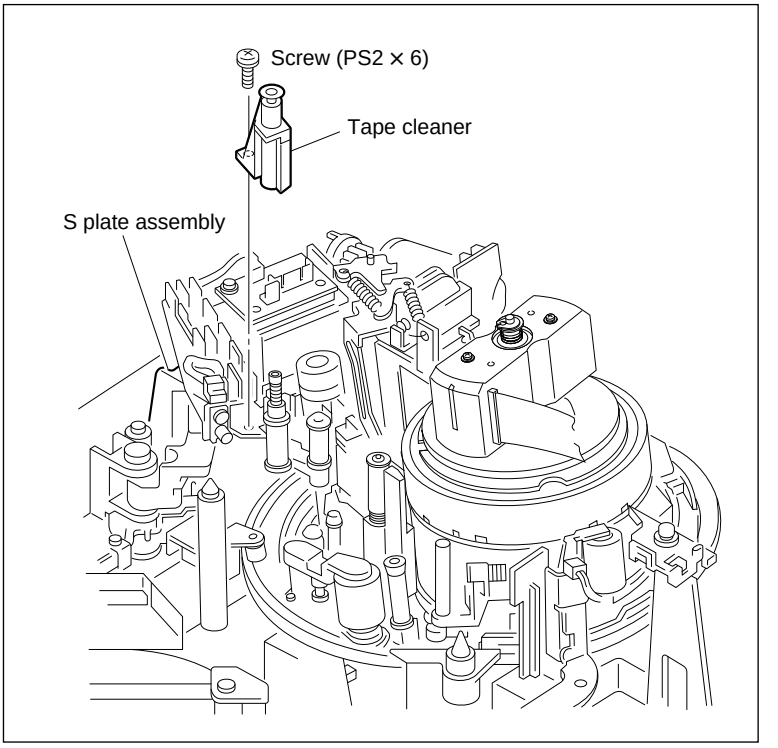
Remove the screw, then remove the tape cleaner from the S plate assembly.

Installation

2. Install the Tape Cleaner

Tighten the screw while moving the tape cleaner clockwise.

Tightening torque: 19.6×10^{-2} N•m (2 kgf•cm)



Remove/Install the Tape Cleaner

3-5. Threading Ring Block

3-5-1. CTL/TC Head Cleaner Replacement

Outline

Replacement

1. Remove the CL Arm Assembly
2. Install the CL Arm Assembly
3. Confirm the CL Arm Assembly Operation

Note

1. When the cleaning roller became dirty or was damaged, replace the CL arm assembly.
2. Do not use the stop washer fixing the CL arm assembly again after it was removed once.
3. Adjustment after the CL arm assembly replacement is not required. However, confirm the CL arm assembly operation.

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

Removal

1. Remove the CL Arm Assembly

(1) Turn the M gear of the gear box assembly manually in the direction of the arrow and move the CL arm assembly to the position shown in the figure.

Note

Move the CL arm assembly to the front of the SE-358 board. If not, the CL arm assembly cannot be removed because the stop washer is hidden by other parts.

(2) Remove the stop washer at the top of the CL arm.

(3) Remove the CL arm assembly from the threading ring.

CAUTION

Do not remove the spring at the bottom of the CL arm from the shaft.

Installation

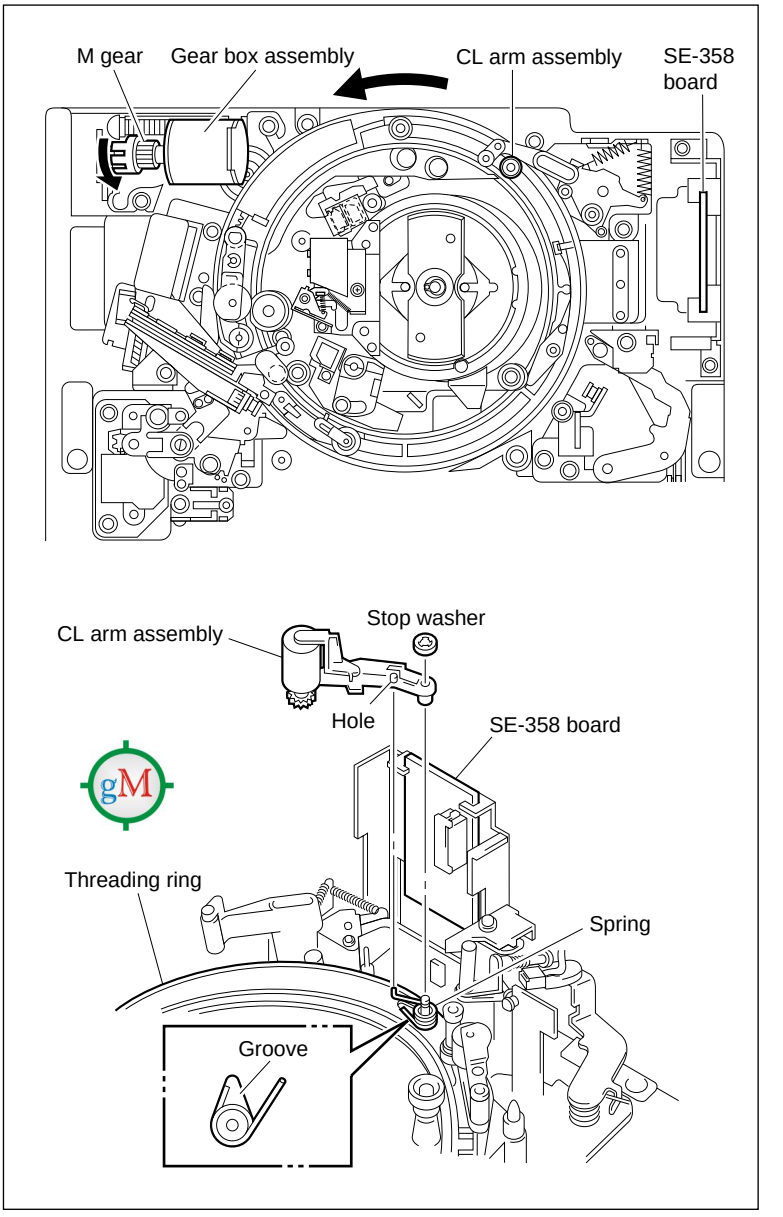
2. Install the CL Arm Assembly

(1) Pass a new CL arm assembly through the shaft while hooking the spring as shown in the figure.

CAUTION

Insert the short-end spring into the groove of the threading ring and the long-end spring into the hole of the CL arm assembly.

(2) Fix the CL arm assembly by the stop washer.

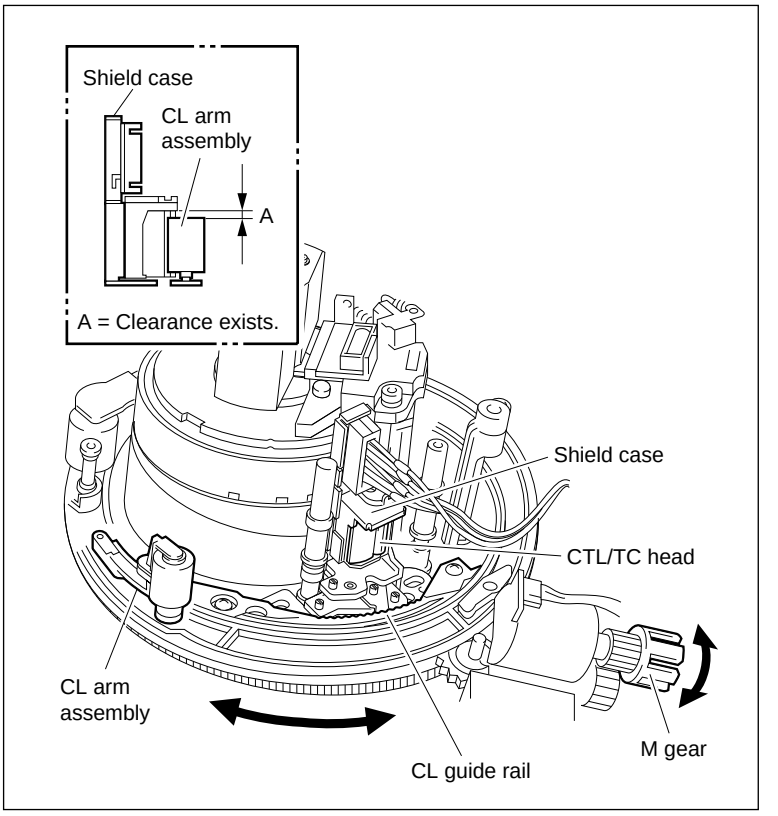


Remove/Install the CL Arm Assembly

3. Confirm the CL Arm Assembly Operation

(1) Turn the M gear of the gear box assembly manually and confirm the items below while repeating the threading and unthreading.
- The CL arm assembly moves along the CL guide rail.
- The cleaning roller cleans the CTL/TC head.
- Confirm that clearance exists in portion A between the CL arm assembly and shield case when the CTL/TC head is cleaned.

(2) Turn the power on and confirm that the CL arm assembly smoothly operates while repeating the threading and unthreading.



Confirm the CL Arm Assembly Operation

3-5-2. Pinch Roller Replacement

Outline

Replacement

1. Remove the Pinch Arm Assembly
2. Install the Pinch Arm Assembly
3. Adjust the Pinch Arm Assembly Vertical Play
4. Cleaning (Pinch Roller Surface)

Notes

1. When the pinch roller was damaged or worn, replace the pinch roller assembly.
2. Do not use the stop washer fixing the pinch arm assembly again after it was removed once.

Tools

- Thickness gauge: 9-911-053-00
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

Removal

1. Remove the Pinch Arm Assembly

(1) Remove the stop washer at the top of the pinch arm.

CAUTION

If a poly-slider washer for vertical play adjustment is inserted between the pinch arm assembly and the stop washer, remove it.

(2) Remove the pinch arm assembly from the threading ring.

CAUTION

Do not remove the poly-slider washer and spring at the bottom of the pinch arm assembly from the shaft.

Installation

2. Install the Pinch Arm Assembly

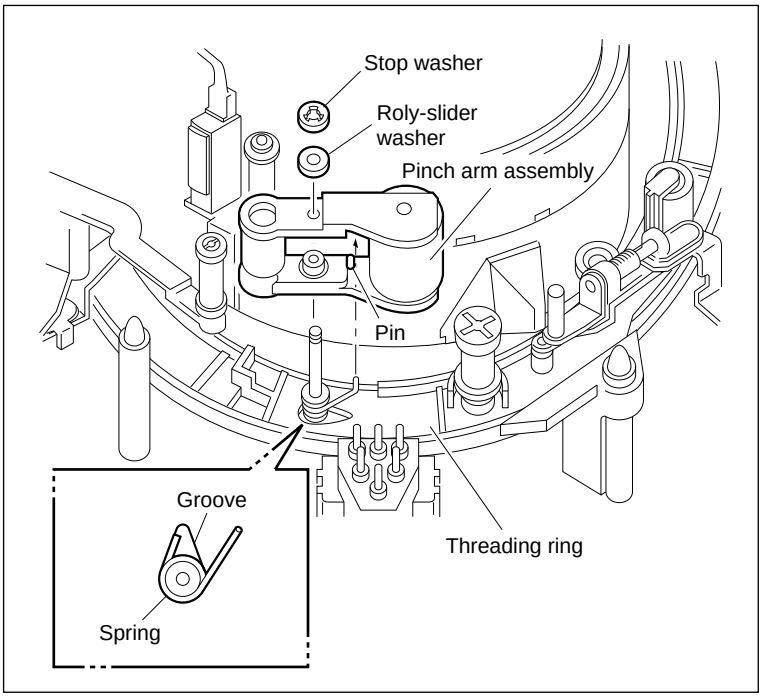
(1) Pass a new pinch arm assembly through the shaft while hooking the spring as shown in the figure.

CAUTION

Insert the short-end spring into the groove of the threading ring and hook the long-end spring to the pin of the pinch arm assembly.

(2) Fix the pinch arm assembly by the stop washer.

(3) Push the pinch arm assembly manually in the direction of the drum, then release. At that time, confirm that the pinch arm assembly smoothly returns to the former position.



Remove/Install the Pinch Arm Assembly

3. Adjust the Pinch Arm Assembly Vertical Play

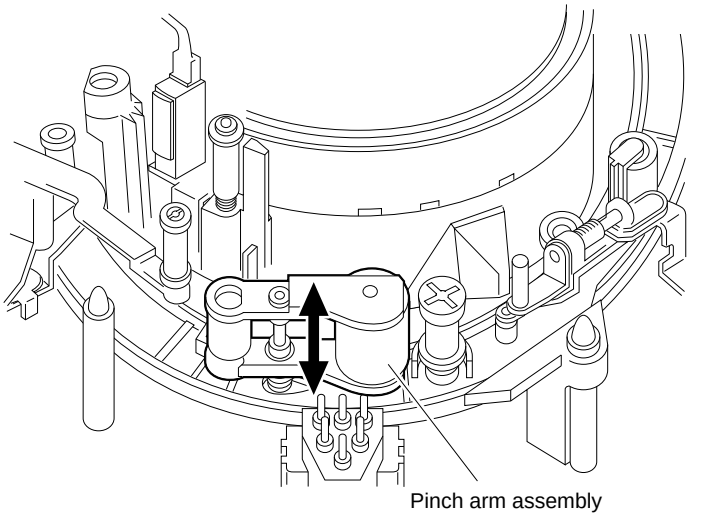
Move the pinch arm assembly in the vertical direction.
At this time, confirm that the vertical play satisfies the specification.

If the specification is not satisfied, perform the adjustment below.

① Remove the stop washer.
② Install or remove the poly-slider washer at the upper of the pinch arm.
③ Fix the pinch arm assembly by the stop washer, confirm again that the specification is met.

4. Cleaning

Clean the pinch roller surface with a cleaning cloth moistened with cleaning fluid.



Spec : Vertical play
0.05 mm to 0.2 mm

• Poly-slider washer for adjustment

Diameter	Thickness	Parts No.
3.0 mm	0.13 mm	3-701-439-01
	0.25 mm	3-701-439-11

Adjust the Pinch Arm Assembly Vertical Play

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3-5-3. Threading Ring Assembly Replacement

Outline

Replacement

1. Disconnect the Flexible Board (CN2/SE-358 Board)
2. Disconnect the Connector (CTL/TC Head Board)
3. Remove the Pinch Arm Guard
4. Remove the CL Guide Rail
5. Remove the Pinch Press Assembly (Refer to steps 1 and 2 in Section 3-6-3.)
6. Remove the S Plate Assembly
7. Remove the S Tension Regulator Assembly
   (Refer to steps 1 and 2 in Section 3-4-1.)
8. Remove the T Drawer Assembly (Refer to steps 1 and 2 in Section 3-6-6.)
9. Remove the Gear Box Assembly (Refer to steps 1 and 2 in Section 3-6-4.)
10. Remove the Ring Roller
11. Remove the Threading Ring Assembly
12. Cleaning (Threading Ring Assembly)
13. Install the Threading Ring Assembly
14. Install the Ring Roller
15. Install the Gear Box Assembly (Refer to steps 3 and 4 in Section 3-6-4.)
16. Confirm the Threading Ring Operation
17. Install the S Plate Assembly
18. Install the Pinch Press Assembly (Refer to steps 3 and 4 in Section 3-6-3.)
19. Put the Unit into the Unthreading End Mode
20. Install the S Tension Regulator Assembly (Refer to step 3 in Section 3-4-1.)
21. Install the T Drawer Assembly (Refer to step 3 in Section 3-6-6.)
22. Confirm the T Drawer Assembly Operation (Refer to step 4 in Section 3-6-6.)
23. Install the CL Guide Rail
24. Confirm the CL Arm Assembly Operation (Refer to step 3 in Section 3-5-1.)
25. Install the Pinch Arm Guard
26. Connect the Flexible Board (CN2/SE-358 Board)
27. Connect the Connector (CTL/TC Head Board)

Adjustment after Replacement

28. Adjust the Pinch Press Clearance (Refer to Section 4-8.)
29. Confirm the Tape Running (Refer to Section 5-3.)

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD.(Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

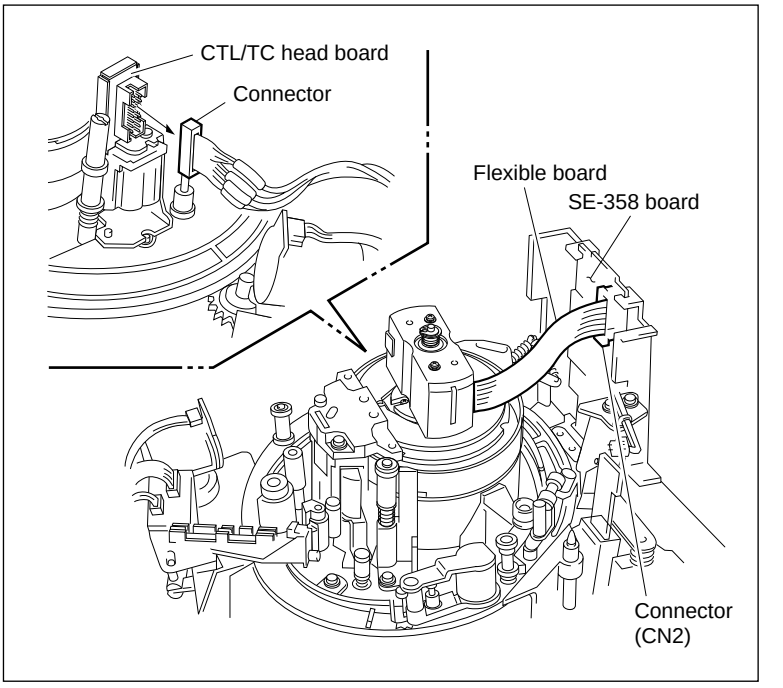
Removal

1. Disconnect the Flexible Board

Disconnect the flexible board from connector CN2 on the SE-358 board.

2. Disconnect the Connector

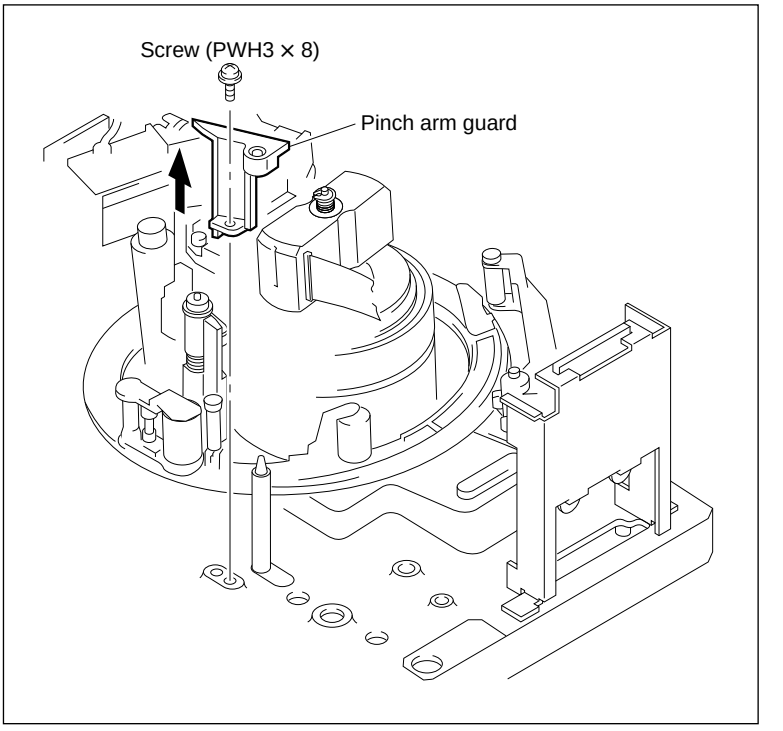
Disconnect the connector on the CTL/TC head board.



Disconnect the Flexible Board and the Connector

3. Remove the Pinch Arm Guard

Remove the screw, then remove the pinch arm guard.



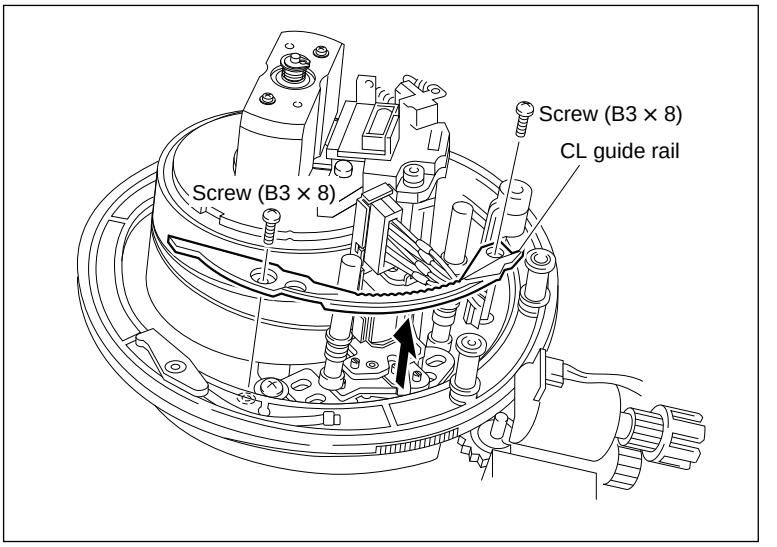
Remove the Pinch Arm Guard

4. Remove the CL Guide Rail

Remove the two screws, then remove the CL guide rail.

5. Remove the Pinch Press Assembly

Refer to steps 1 and 2 in Section 3-6-3.



Remove the Pinch Arm Guard

6. Remove the S Plate Assembly

(1) Cut the harness clamper, then disconnect the connectors CN210 on the EQ-66 board and CN851 on the PD-35.
(2) Cut the harness clamper, then disconnect the connector on the full erase head board.
(3) Remove the screw, then remove the S plane assembly.

CAUTION

Never touch the tape cleaner with bare hands. The tape cleaner has a sharp edge.

7. Remove the S Tension Regulator Assembly

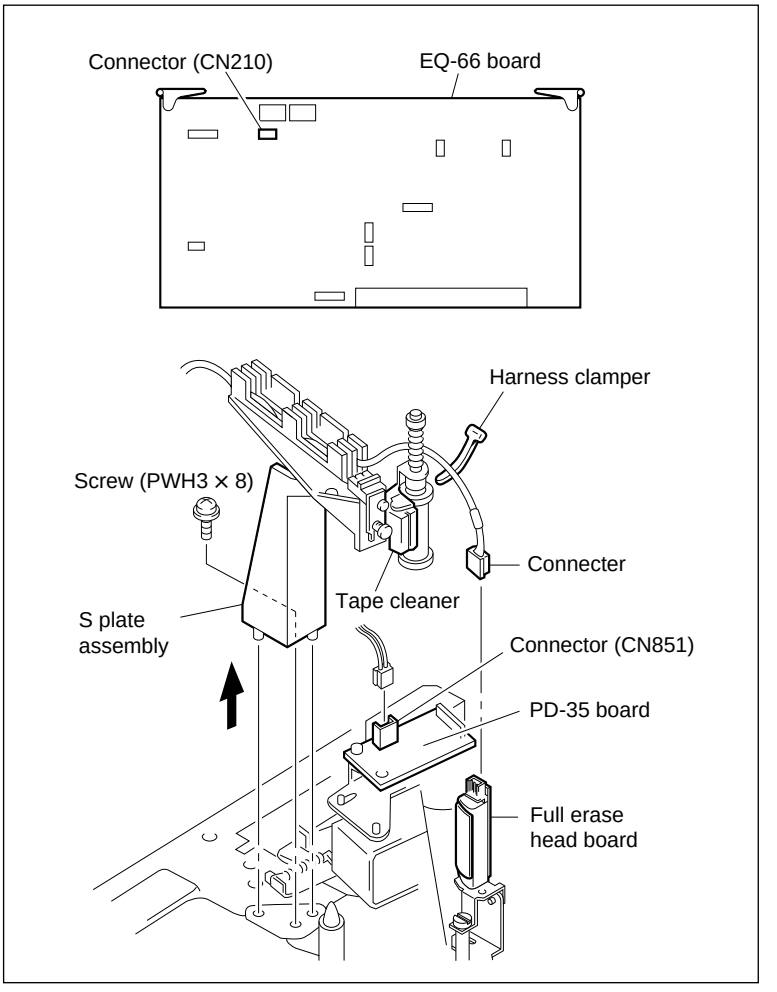
Refer to steps 1 and 2 in Section 3-4-1.

8. Remove the T Drawer Assembly

Refer to steps 1 and 2 in Section 3-6-6.

9. Remove the Gear Box Assembly

Refer to steps 1 and 2 in Section 3-6-4.



Remove the S Plate Assembly

10. Remove the Ring Roller

Remove the screw, then remove the ring roller (B).

CAUTION

Be careful not to touch the drum (especially the rotary heads).

11. Remove the Threading Ring Assembly

Remove the threading ring assembly from the chassis.

CAUTION

Be careful not to damage the drum (especially the rotary heads and the tape running surface of the upper drum) and the capstan motor shaft.

Installation

12. Cleaning

Clean the inside of the threading ring assembly with a cleaning cloth moistened with cleaning fluid.

13. Install the Threading Ring Assembly

Press the T tension arm in the direction indicated by the arrow, and install the threading ring assembly while fitting it to the grooves of the ring rollers (A) and (C).

14. Install the Ring Roller

(1) Pass the ring roller (B) through the ring roller shaft while holding the threading ring assembly so that it does not come off from the grooves of the ring rollers (A) and (C). Then tighten the screw.

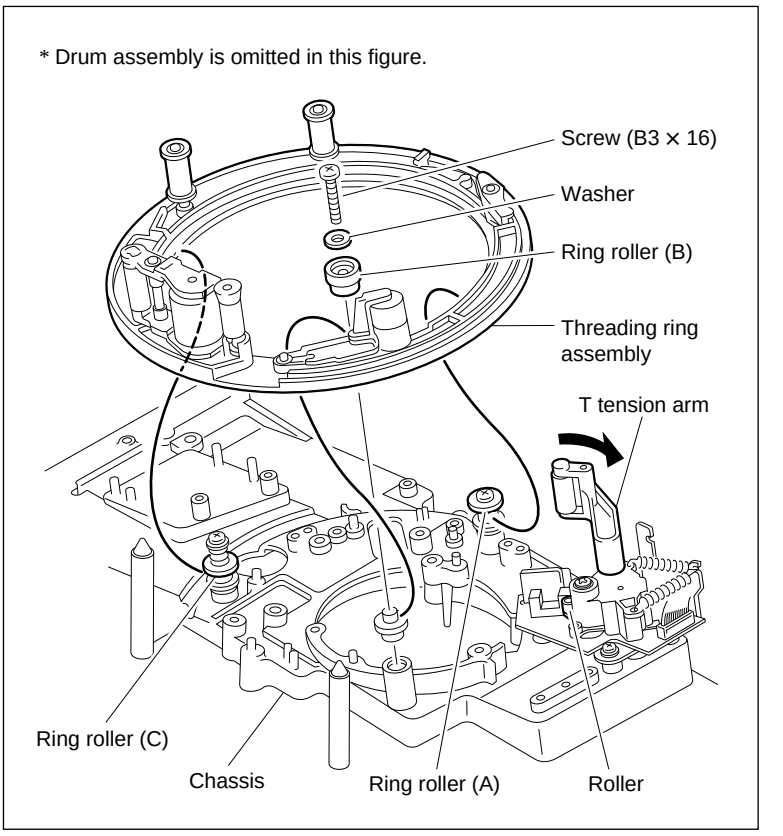
(2) Check that the threading ring does not come off from the three ring rollers.
And check that the roller of the T tension regulator does not come off from the side of the threading ring.

15. Install the Gear Box Assembly

Refer to steps 3 and 4 in Section 3-6-4.

16. Confirm the Threading Ring Operation

Turn the M gear of the gear box assembly manually and confirm that the threading ring and the three ring rollers rotates smoothly while repeating the threading and unthreading.



Remove/Install the Threading Ring Assembly

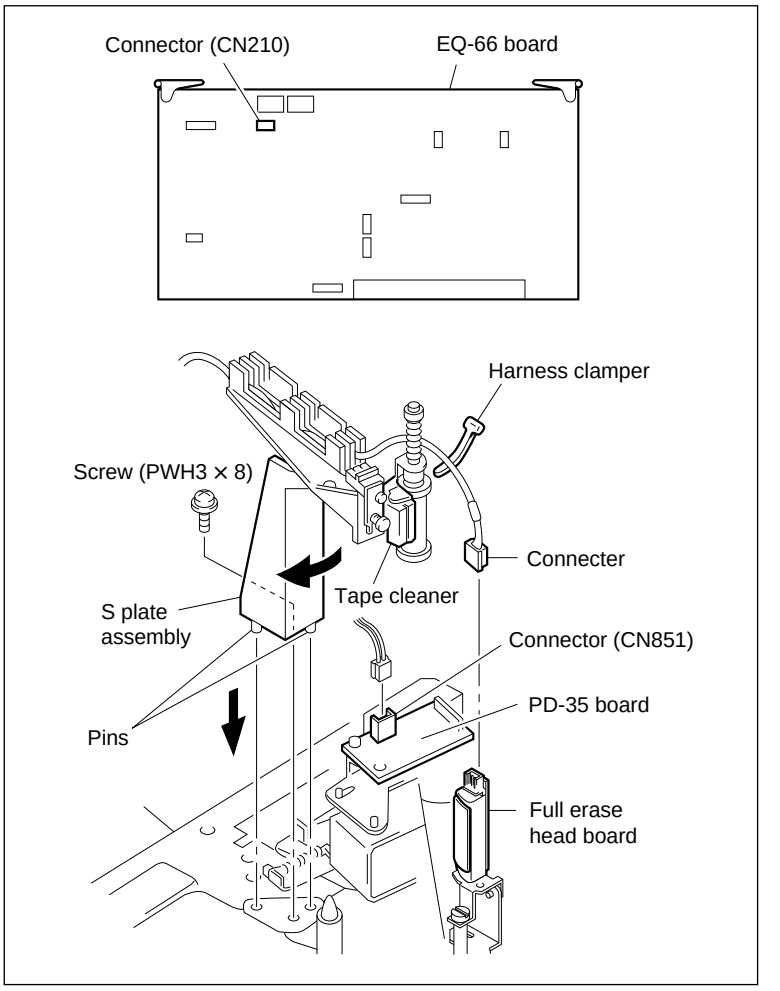
17. Install the S Plate Assembly

(1) Align the two pins of the S plate assembly with the two holes of the chassis. Then tighten the screw while moving the S plate assembly clockwise.

CAUTION

Never touch the tape cleaner with bare hands. The tape cleaner has a sharp edge.

(2) Connect the connector into connectors CN210 on the EQ-66 board and CN851 on the PD-35 board.
(3) Bind the harness with the harness clamper (or the equivalent).
(4) Connect the connector into the full erase head board.
(5) Bind the harness with the harness clamper (or the equivalent).



Install the S Plate Assembly

18. Install the Pinch Press Assembly

Refer to steps 3 and 4 in Section 3-6-3.

19. Put the Unit into the Unthreading End Mode

20. Install the S Tension Regulator Assembly

Refer to step 3 in Section 3-4-1.

21. Install the T Drawer Assembly

Refer to step 3 in Section 3-6-6.

22. Confirm the T Drawer Assembly Operation

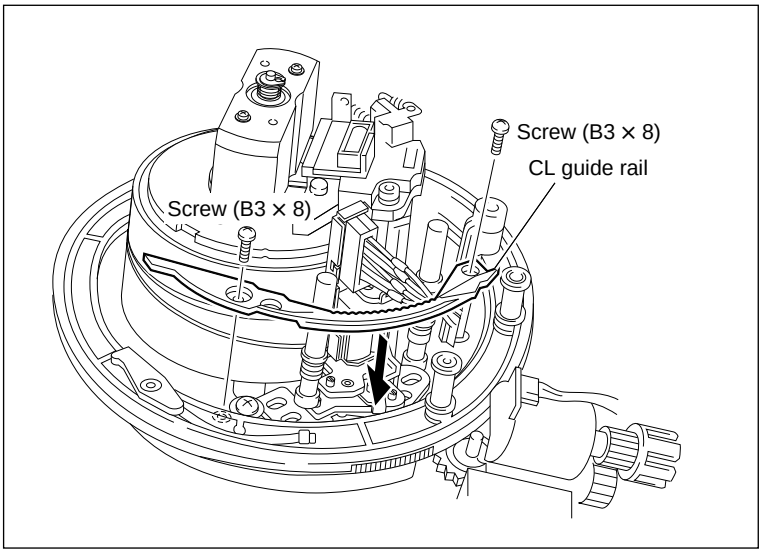
Refer to step 4 in Section 3-6-6.

23. Install the CL Guide Rail

Install the CL guide rail with two screws.

24. Confirm the CL Arm Assembly Operation

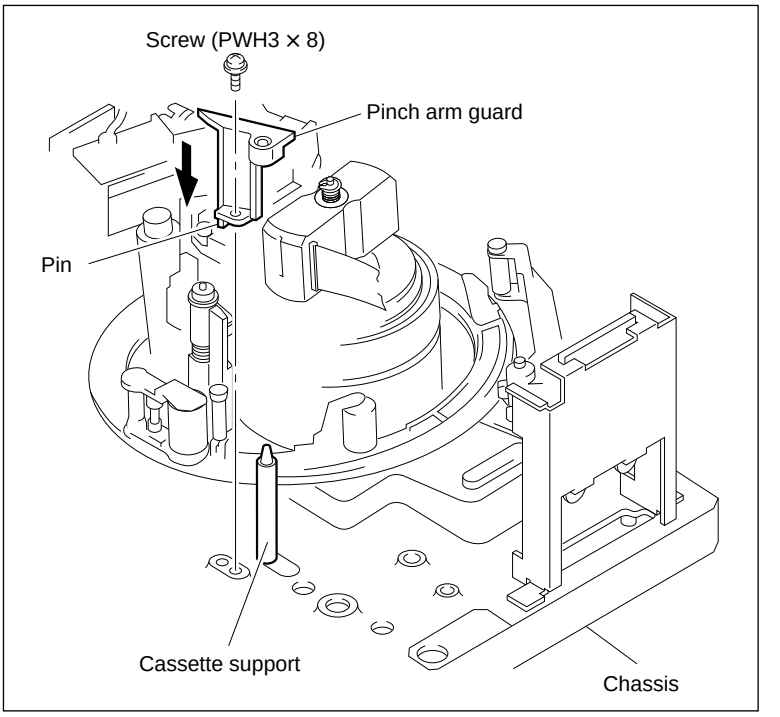
Refer to step 3 in Section 3-5-1.



Install the Pinch Arm Guard

25. Install the Pinch Arm Guard

(1) Pass the pinch arm guard through the cassette support, and align the pin with the hole of the chassis.
(2) Tighten the screw.



Install the Pinch Arm Guard

26. Connect the Flexible Board

Connect the flexible board into connector CN2 on the SE-358 board.

27. Connect the Connector

Connect the connector into the CTL/TC head board.

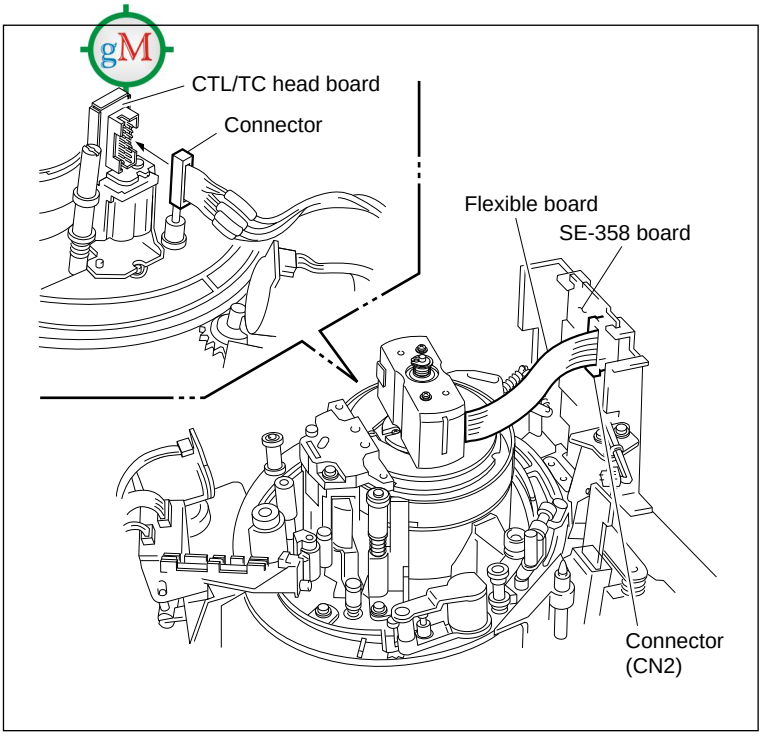
Adjustment after Replacement

28. Adjust the Pinch Press Clearance

Refer to Section 4-8.

29. Confirm the Tape Running

Refer to Section 5-3.



Connect the Flexible Board and the Connector

3-6. Drum Exit Side Block

3-6-1. CTL/TC Head Replacement

Outline

Replacement

1. Remove the CL Guide Rail (Refer to step 4 in Section 3-5-3.)
2. Disconnect the Connector
3. Remove the CTL/TC Head Assembly
4. Install the CTL/TC Head Assembly
5. Connect the Connector
6. Install the CL Guide Rail (Refer to step 23 in Section 3-5-3.)
7. Cleaning (CTL/TC Head Surface)

Adjustment after Replacement

8. Adjust the CTL/TC Head Zenith (Refer to Section 5-2.)
9. Adjust the Tape Running (Refer to Section 5-3.)
10. Adjust the CTL/TC Head Height (Refer to Section 5-5.)
11. Adjust the CTL/TC Head Azimuth (Refer to Section 5-6.)
12. Adjust the CTL/TC Head Position (Refer to Section 5-7.)
13. Perform the PG Adjustment (SV1E: Manual PG Adjustment) (Refer to Section 6-2.)
14. Confirm the Tracking (Refer to Section 5-4.)
15. Confirm the Tape Running (Refer to Section 5-3.)
16. Confirm the Time Code Level in REV Mode (Refer to Section 5-8.)

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Torque screwdriver (6 kg•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l=75 mm): J-6323-420-A

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

Removal

1. Remove the CL Guide Rail

Refer to step 4 in Section 3-5-3.

2. Disconnect the Connector

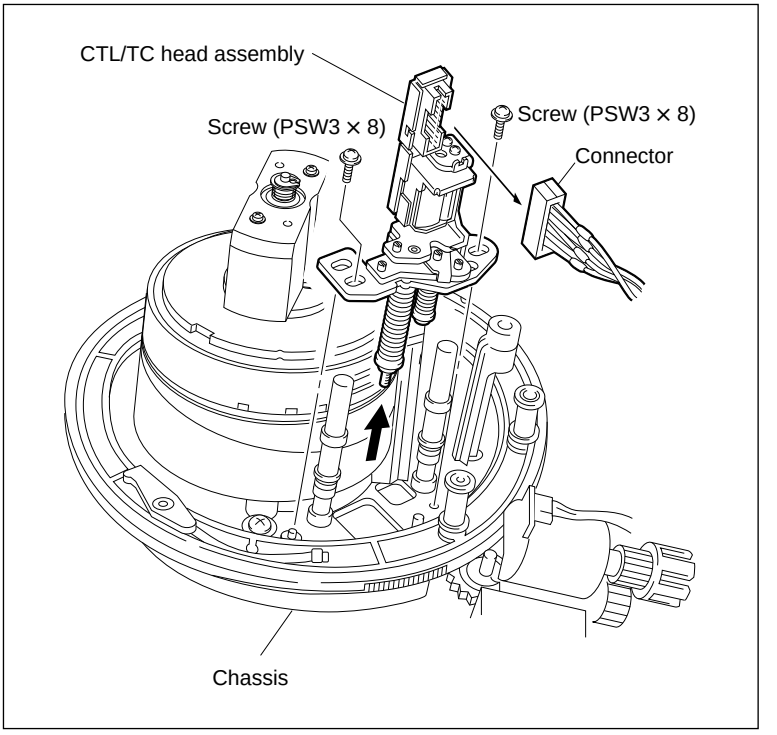
Disconnect a connector on the CTL/TC head board.

3. Remove the CTL/TC Head Assembly

Remove the two screws, then remove the CTL/TC head assembly from the unit.

CAUTION

Be careful not to touch the drum (especially rotary heads). Also, take care not to damage the peripheral tape guides.



Remove the CTL/TC Head Assembly

4. Install the CTL/TC Head Assembly

(1) Align the two longitudinal holes of the CTL/TC head assembly with the two bosses of the chassis.

CAUTION

1. Be careful not to touch the drum (especially rotary heads). Also, take care not to damage the peripheral tape guides.
2. Be careful not to damage the CTL/TC head surface.

(2) Align the bosses of the chassis with center of the longitudinal holes and tighten the two screws.

5. Connect the Connector

Connect a connector into the CTL/TC head board.

6. Install the CL Guide Rail

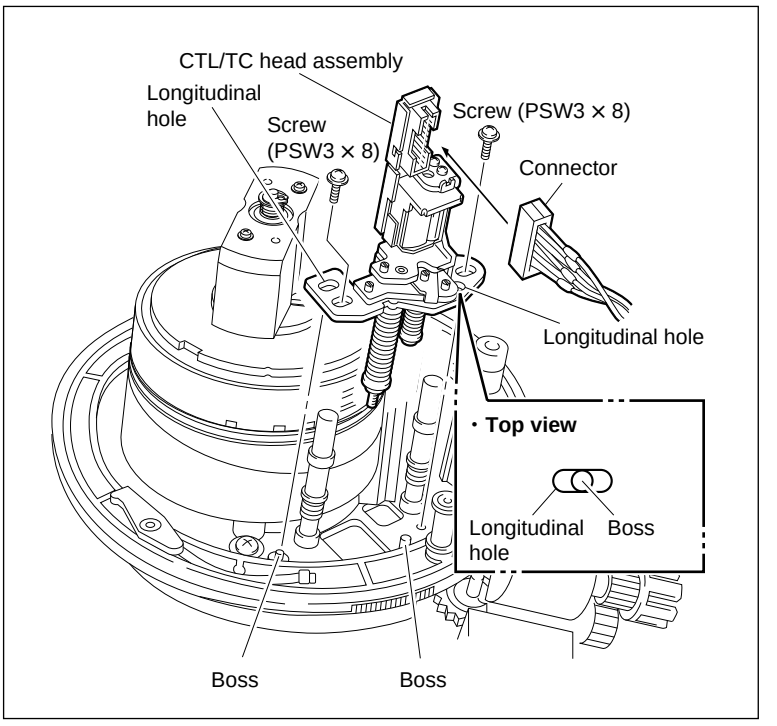
Refer to step 23 in Section 3-5-3.

7. Cleaning

Clean the CTL/TC head surface with a cleaning cloth moistened with cleaning fluid.

CAUTION

After cleaning, wipe with a dry cleaning cloth.



Install the CTL/TC Head Assembly

Adjustment after Replacement

8. Adjust the CTL/TC Head Zenith

Refer to Section 5-2.

9. Adjust the Tape Running

Refer to Section 5-3.

10. Adjust the CTL/TC Head Height

Refer to Section 5-5.

11. Adjust the CTL/TC Head Azimuth

Refer to Section 5-6.

12. Adjust the CTL/TC Head Position

Refer to Section 5-7.

13. Perform the PG Adjustment

Refer to Section 6-2.
(SV1E: Manual PG Adjustment)

14. Confirm the Tracking

Refer to Section 5-4.

15. Confirm the Tape Running

Refer to Section 5-3.

16. Confirm the Time Code Level in REV Mode

Refer to Section 5-8.

3-6-2. Capstan Motor Replacement

Outline

Replacement

1. Remove the Rotary Head Cleaner Assembly
   (Refer to steps 1 and 2 in Section 3-3-4.)
2. Open the DR-327 Board
3. Remove the Capstan Motor
4. Install the Capstan Motor
5. Tighten the DR-327 Board
6. Install the Rotary Head Cleaner Assembly
   (Refer to steps 4 through 6 in Section 3-3-4.)
7. Cleaning (Capstan Motor Shaft)

Adjustment after Replacement

8. Confirm the Pinch Press Clearance (Refer to Section 4-8.)
9. Confirm the Tape Running (Refer to Section 5-3.)
10. Confirm the Capstan Motor Operation (SV15: Capstan Motor Check)
    (Refer to Section 6-2.)
11. Perform the Capstan FG Duty Automatic Adjustment
    (SV04: Capstan FG Duty Adjust) (Refer to Section 6-5-4.)
12. Perform the Free Speed Automatic Adjustment (SV0A: Free Speed Adjust)
    (Refer to Section 6-5-10.)

Note

Replace the capstan motor with the side panel of the unit down.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)
5. Remove the front panel. (Refer to Section 1-1-1.)
6. Remove the bottom plate. (Refer to Section 1-1-1.)
7. Remove the MA-83 board. (Refer to Section 1-8-1.)

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Removal

1. Remove the Rotary Head Cleaner Assembly

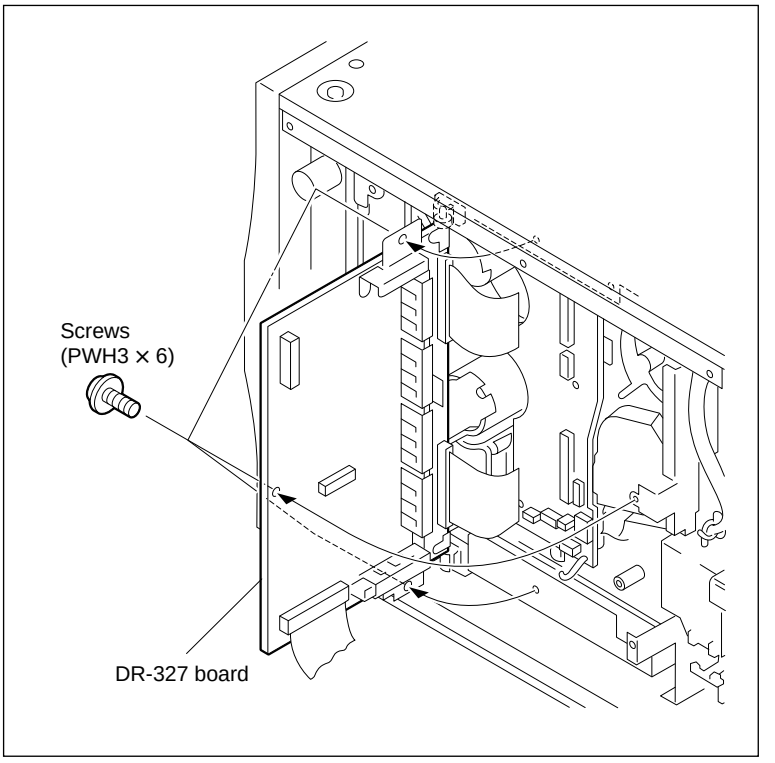
Refer to steps 1 and 2 in Section 3-3-4.

Note

To remove the fixing screws of the capstan motor, remove the rotary head cleaner assembly.

2. Open the DR-327 Board

(1) Put the unit on its left side panel down, remove the three screws, and open the DR-327 board with the side panel of the unit down.



Open the DR-327 Board

3. Remove the Capstan Motor

(1) Disconnect the connector on the capstan motor board.

(2) Remove the two screws while holding the capstan motor by hand.

CAUTION

Be careful not to drop the capstan motor.

Installation

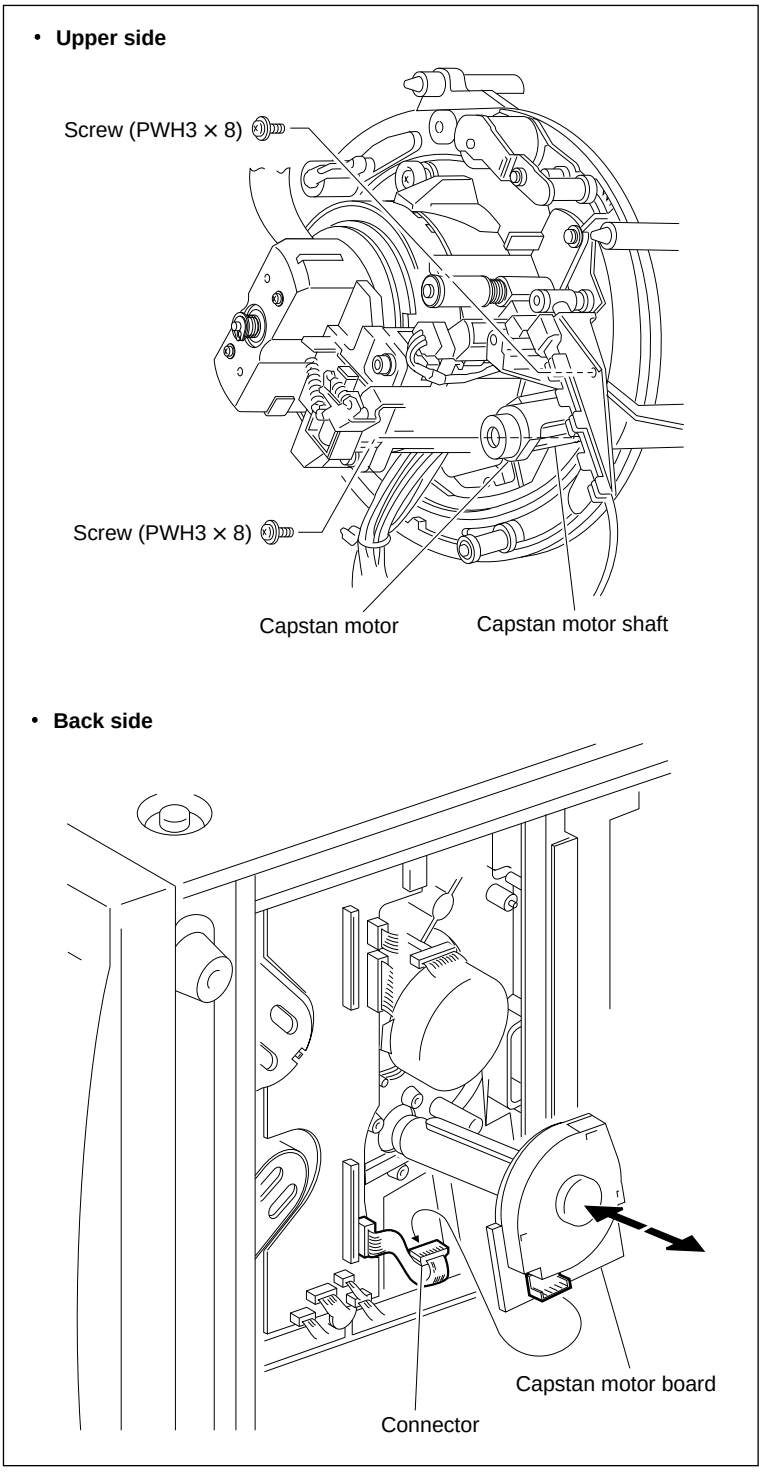
4. Install the Capstan Motor

(1) Pass a new capstan motor through the hole of the chassis in the direction shown in the figure and tighten the two screws.

CAUTION

Be careful not to damage the capstan motor shaft when passing the capstan motor through the hole of the chassis.

(2) Connect the connector disconnected in (1) of step 3 to the capstan motor board.



Remove/Install the Capstan Motor

5. Tignten the DR-327 Board

(1) Tignten the DR-327 board with the three screws shown in the figure.

6. Install the Rotary Head Cleaner Assembly

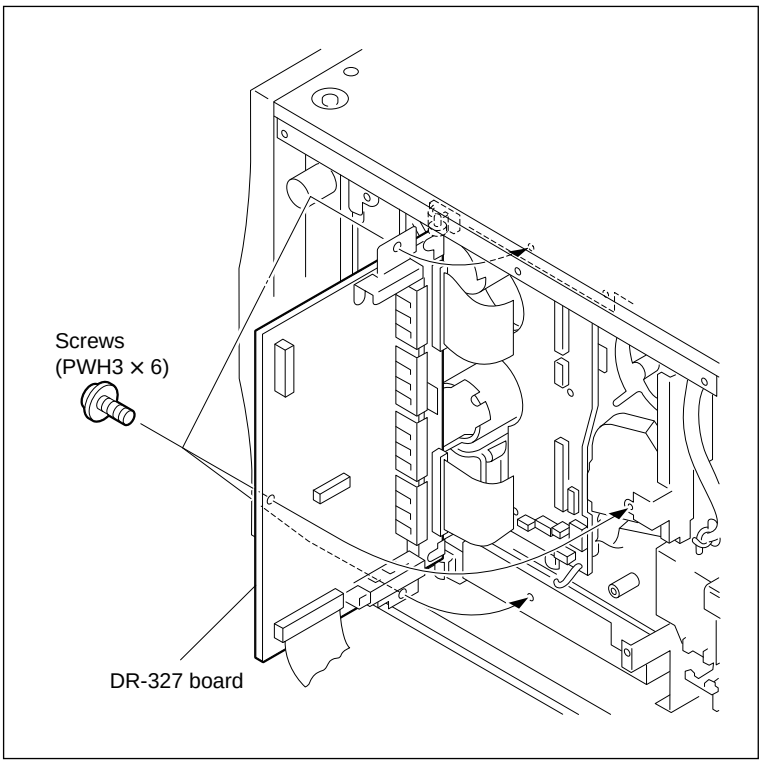
Refer to steps 4 through 6 in Section 3-3-4.

7. Cleaning

Clean the capstan motor shaft with a cleaning cloth moistened with cleaning fluid.

CAUTION

After cleaning, wipe with a dry cleaning cloth.



Close the DR-327 Board

Adjustment after Replacement

8. Confirm the Pinch Press Clearance

Refer to Section 4-8.

9. Confirm the Tape Running

Refer to Section 5-3.

10. Confirm the Capstan Motor Operation

Refer to Section 6-2.
(SV15: Capstan Motor Check)

11. Perform the Capstan FG Duty Automatic Adjustment

Refer to Section 6-5-4.
(SV04: Capstan FG Duty Adjust)

12. Perform the Free Speed Automatic Adjustment

Refer to Section 6-5-10.
(SV0A: Free Speed Adjust)

3-6-3. Pinch Press assembly Replacement

Outline

Replacement

1. Disconnect the Connector (CN854/PD-35 Board)
2. Remove the Pinch Press Assembly
3. Install the Pinch Press Assembly
4. Connect the Connector (CN854/PD-35 Board)

Adjustment after Replacement

5. Confirm the Pinch Solenoid Operation (SV18: Pinch Roller Solenoid Check) (Refer to Section 6-2.)
6. Adjust the Pinch Press Clearance (Refer to Section 4-8.)

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

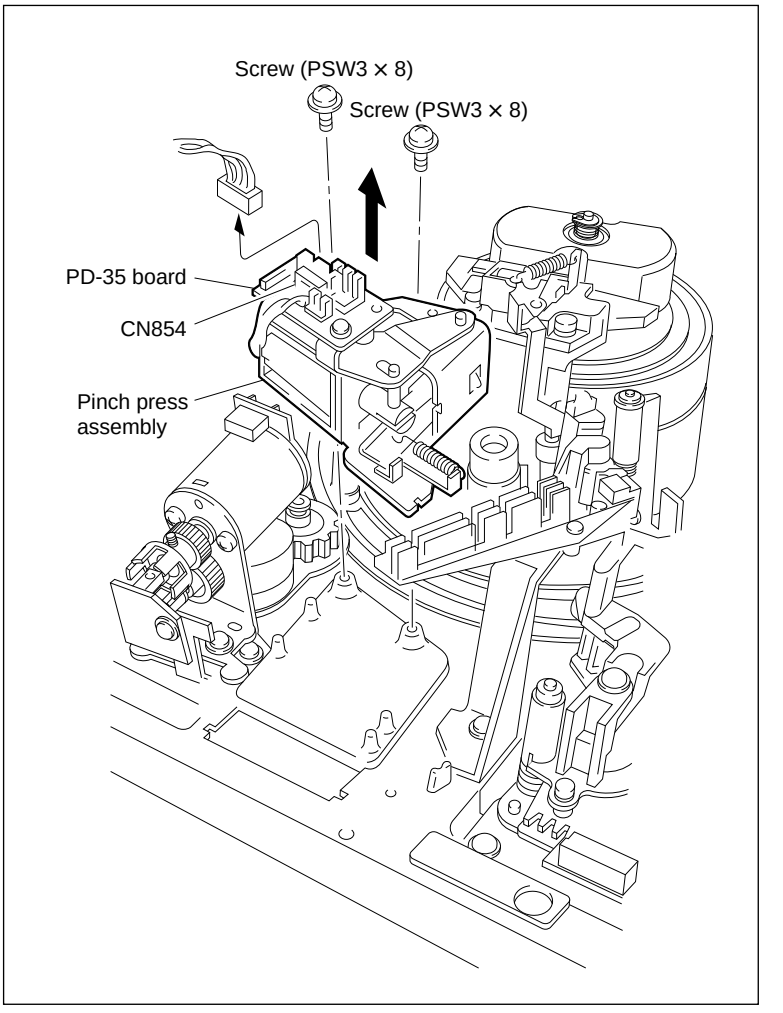
Removal

1. Disconnect the Connector

Disconnect connector CN854 on the PD-35 board.

2. Remove the Pinch Press Assembly

Remove the two screws, then remove the pinch press assembly from the unit.



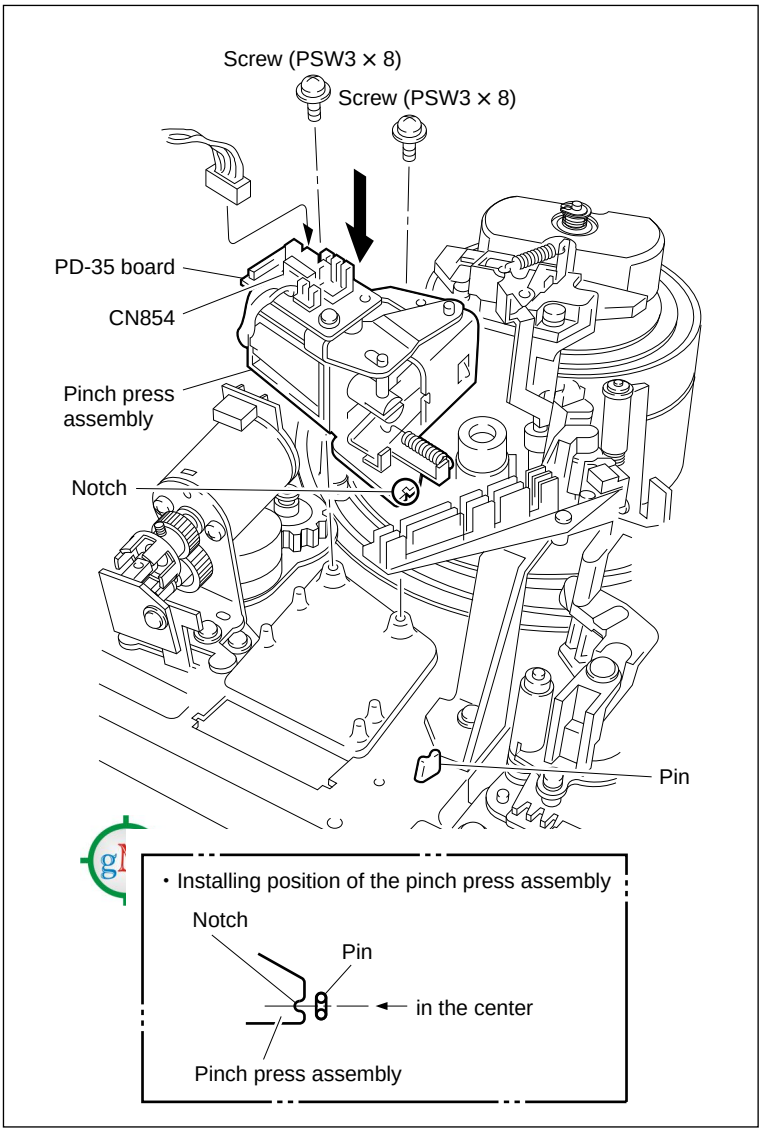
Remove the Pinch Press Assembly

3. Install the Pinch Press Assembly

Align the notch of the pinch press assembly with the center of the pin and tighten the two screws.

4. Connect the Connector

Connect the connector into connector CN854 on the PD-35 board.



Install the Pinch Press Assembly

Adjustment after Replacement

5. Confirm the Pinch Solenoid Operation

Refer to Section 6-2.
(SV18: Pinch Roller Solenoid Check)

6. Adjust the Pinch Press Clearance

Refer to Section 4-8.

3-6-4. Gear Box Assembly Replacement

Outline

Replacement

1. Disconnect the Connectors
   (CN920/CCM-15 Board, CN904/PTC-54 Board)
2. Remove the Gear Box Assembly
3. Install the Gear Box Assembly
4. Connect the Connectors
   (CN920/CCM-15 Board, CN904/PTC-54 Board)

Adjustment after Replacement

5. Confirm the Threading Motor Operation (SV13: Threading Motor Check)
   (Refer to Section 6-2.)

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

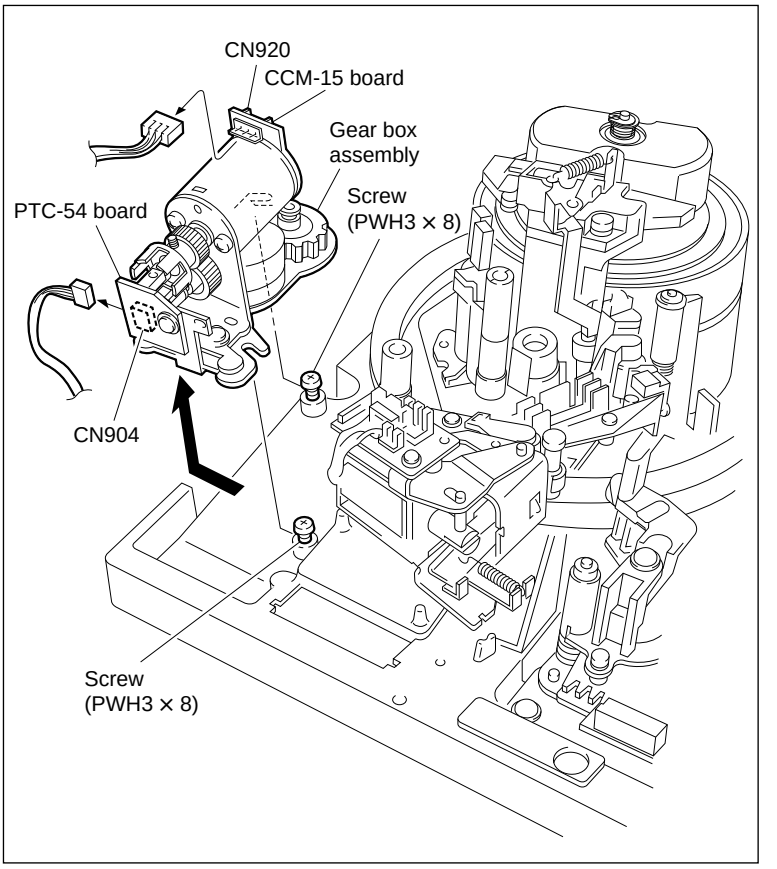
Removal

1. Disconnect the Connectors

Disconnect the two connectors CN920 on the CCM-15 board and CN904 on the PTC-54 board.

2. Remove the Gear Box Assembly

Loosen the two screws, then remove the gear box assembly.



Remove the Gear Box Assembly

Installation

3. Install the Gear Box Assembly

(1) Turn the threading ring manually and move the pinch roller to the front of the pinch solenoid.

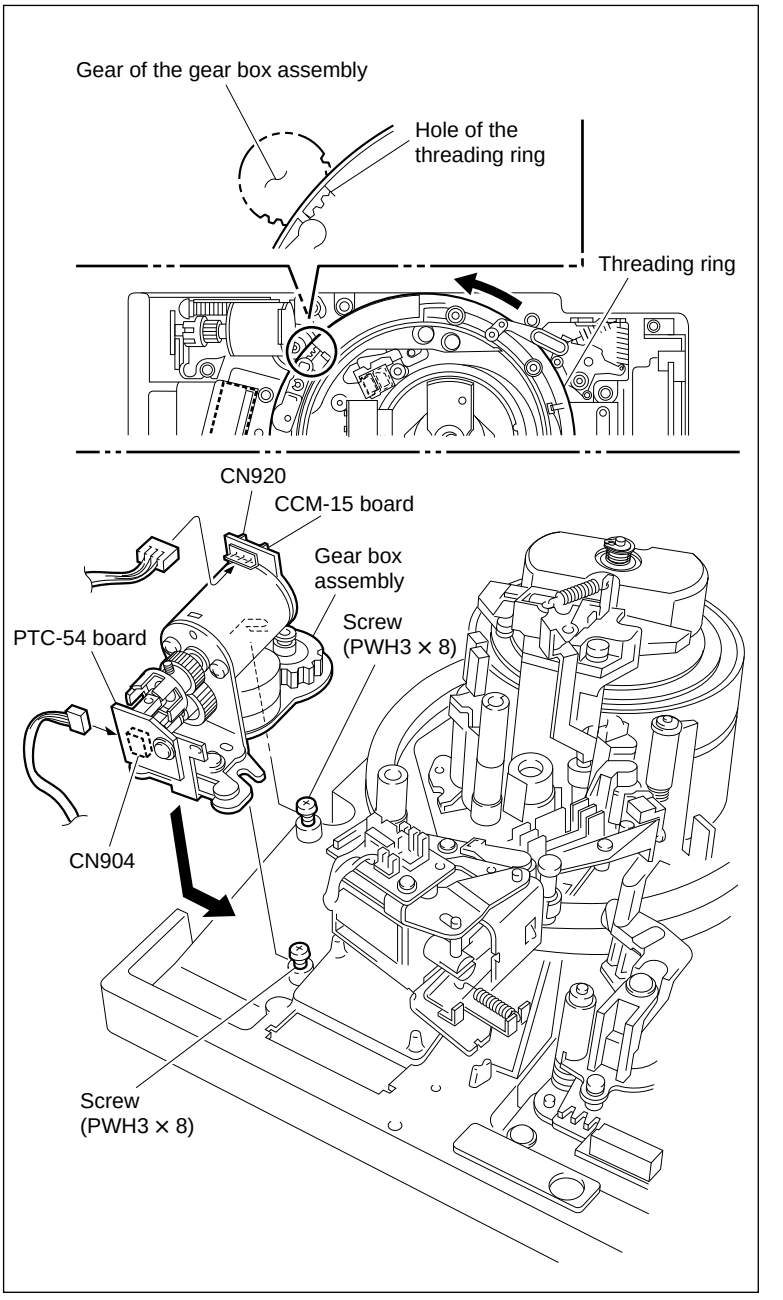
Note

Move the hole of the threading ring in order to check the engagement of the gear when installing the gear box assembly.

(2) Press the gear of the gear box assembly against the gear of the threading ring.
(3) Check that the gear of the gear box assembly engages with the gear of the threading ring as viewed from the hole of the threading ring.
(4) Tighten the two screws while pressing the gear box assembly against the threading ring.

4. Connect the Connectors

Connect the two connectors into connector CN920 on the CCM-15 board and connector CN904 on the PTC-54 board.



Install the Gear Box Assembly

Adjustment after Replacement

5. Confirm the Threading Motor Operation

Refer to Section 6-2.
(SV13: Threading Motor Check)

3-6-5. T Tension Arm Replacement

Outline

Replacement

1. Put the Unit into the Threading End Mode (Refer to step 1 in Section 3-1-3.)
2. Unhook the Tension Springs (T Tension Base Side)
3. Remove the T Tension Arm
4. Install the T Tension Arm
5. Hook the Tension Springs (T Tension Base Side)
6. Confirm the T Tension Regulator Operation

Note

1. Adjustment after the T tension arm replacement is not required. However, confirm the T tension regulator operation.
2. It should not be used the stop washer once and again.
   - Stop washer (d=2.3 mm): 3-669-596-00

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

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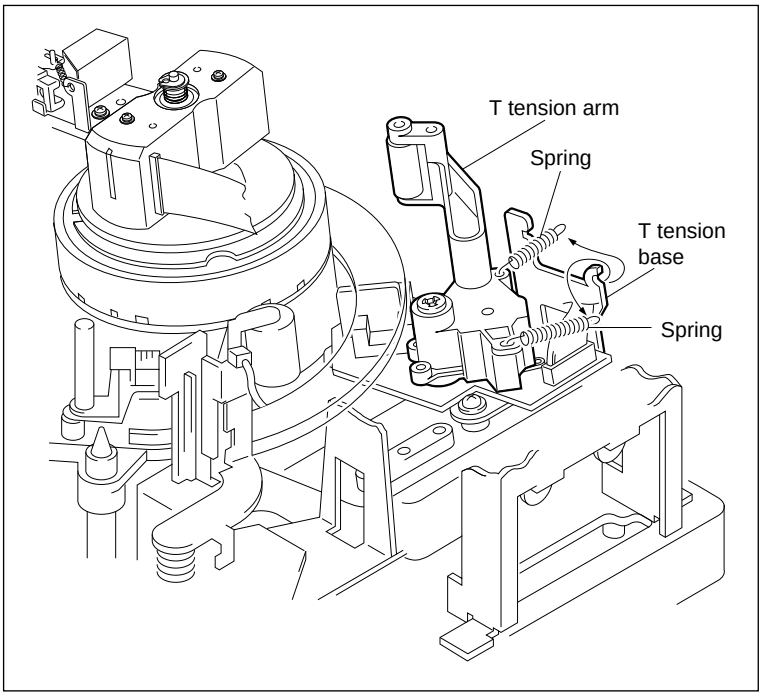
Removal

1. Put the Unit into the Threading End Mode

Refer to step 1 in Section 3-1-3.

2. Unhook the Tension Springs

Unhook the two tension springs put on the T tension base.



Unhook the Tension Springs

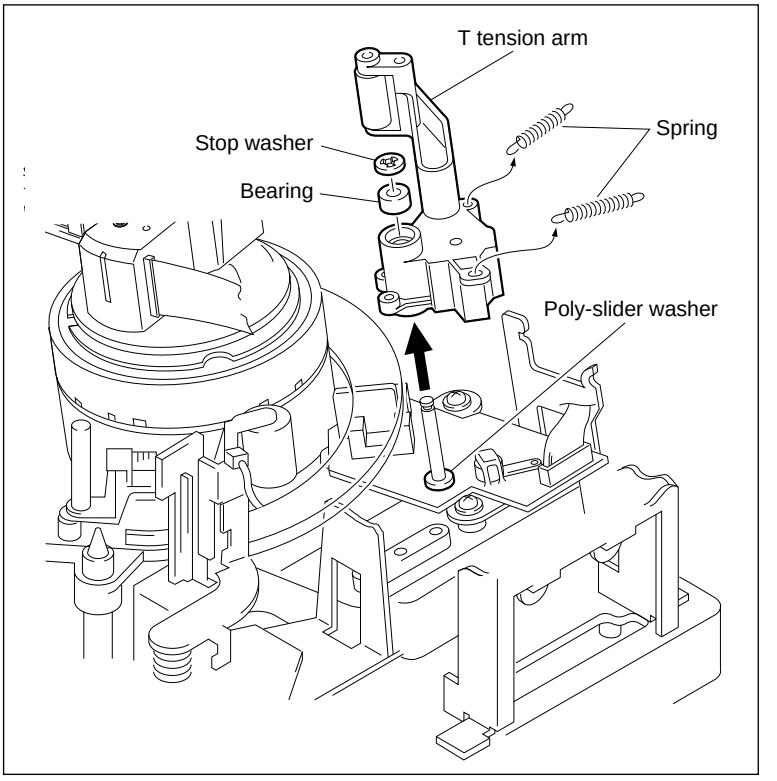
3. Remove the T Tension Arm

(1) Remove the stop washer, then remove the T tension arm.

CAUTION

1. Do not use the stop washer once and again.
2. When the T tension arm is removed, a poly-slider washer may adhere to it. In this case, return the poly-slider washer to the shaft.

(2) Take out the bearing and unhook the two tension springs from the T tension arm.

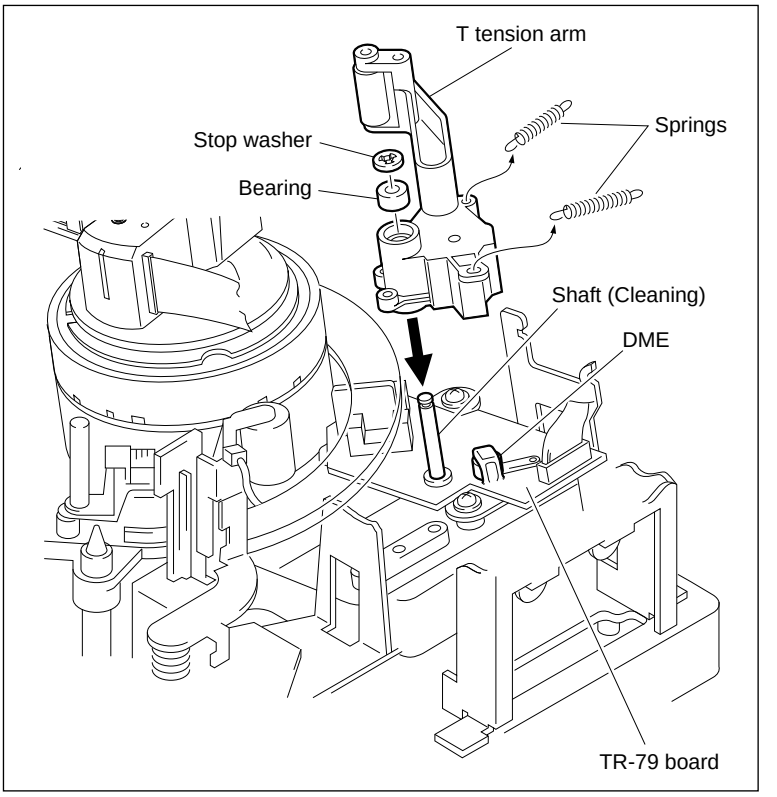


Remove the T Tension Arm

Installation

4. Install the T Tension Arm

(1) Clean the shaft with a cleaning cloth moistened with cleaning fluid.
(2) Insert the bearing into the hole of the T tension arm.
(3) Hook the two tension springs to the T tension arm as shown in the figure.
(4) Pass the T tension arm through the shaft while putting DME on the TR-79 board into the T tension arm.
(5) Fix the T tension arm by the stop washer.



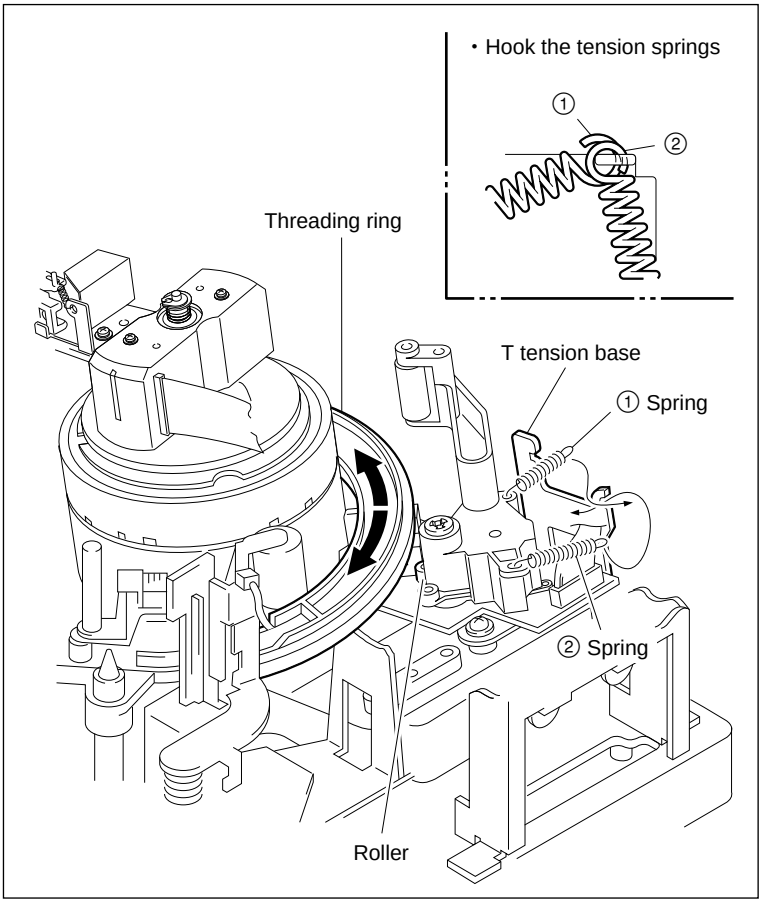
Install the T Tension Arm

5. Hook the Tension Springs

Hook the two tension springs to the T tension base as shown in the figure and in order of ① and ②.

6. Confirm the T Tension Regulator Operation

Confirm that the roller of the T tension regulator does not come off from the side of the threading ring and operates normally while repeating threading and unthreading.



Hook the Tension Springs

3-6-6. T Drawer Arm Replacement

Outline

Replacement

1. Put the Unit into the Unthreading End Mode (Refer to step 2 in Section 3-1-3.)
2. Remove the T Drawer Assembly
3. Install the T Drawer Assembly
4. Confirm the T Drawer Assembly Operation

Adjustment after Replacement

5. Adjust the Slant Guide Slantness (Refer to Section 4-9.)

Note

It should not be used the stop washer once and again.

- Stop washer (d=2.3 mm): 3-669-596-00

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Slide calipers (or the equivalent)

Preparation

1. Turn the power off.
2. Remove the upper lid. (Refer to Section 1-1-1.)
3. Remove the plate MD. (Refer to Section 1-1-1.)
4. Remove the cassette compartment. (Refer to Section 1-1-2.)

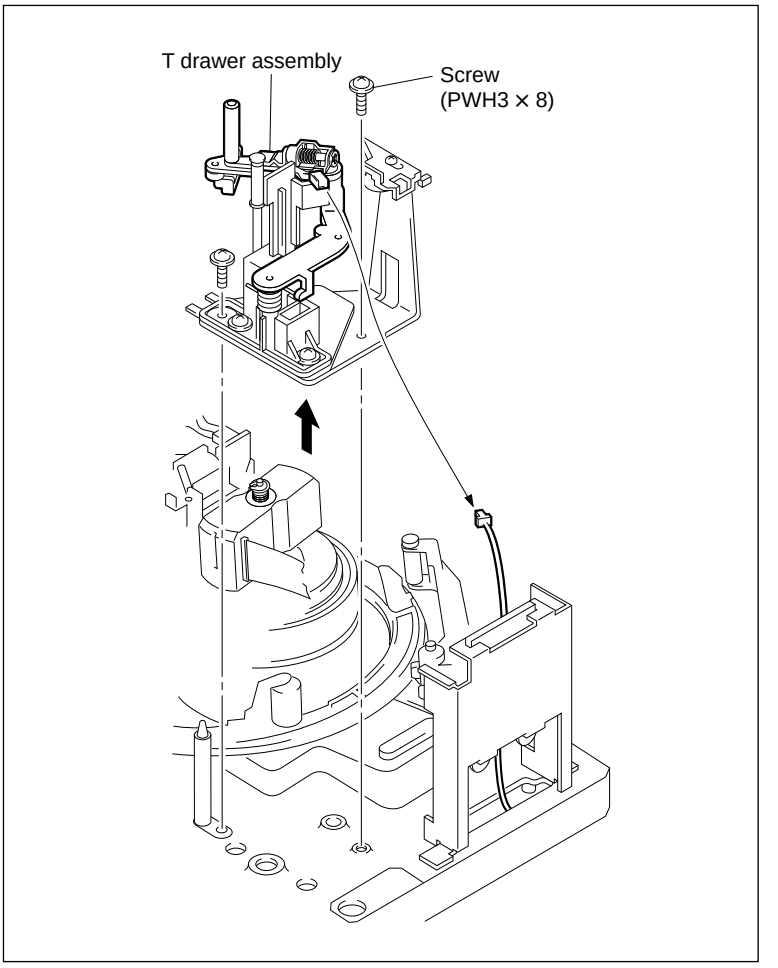
Removal

1. Put the Unit into the Unthreading End Mode

Refer to step 2 in Section 3-1-3.

2. Remove the T Drawer Assembly

(1) Cut the harness clamper, then disconnect the connector.
(2) Remove the two screws, then remove the T drawer assembly.

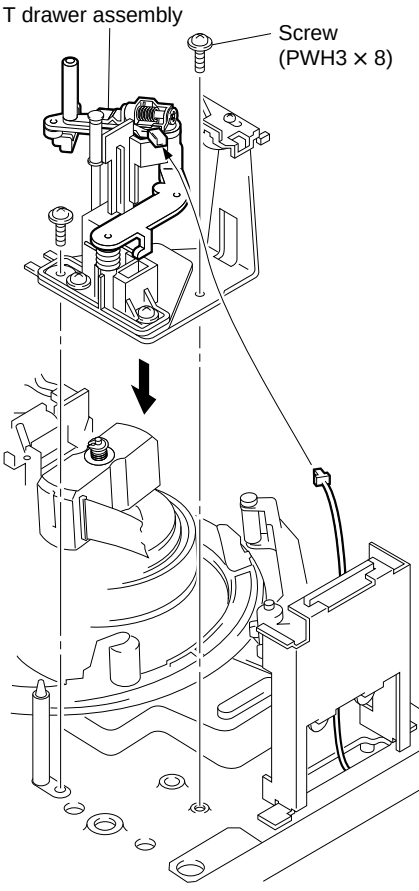


Remove the T Drawer Assembly

Installation

3. Install the T Drawer Assembly

(1) Clean the mounting surfaces of the T drawer assembly and the chassis with a cleaning cloth moistened with cleaning fluid.
(2) Put the T drawer arm assembly on the chassis, then tighten the two screws.
(3) Connect the connector as shown in the figure.
(4) Bind the harness with the harness clamper (or the equivalent).



Install the T Drawer Assembly

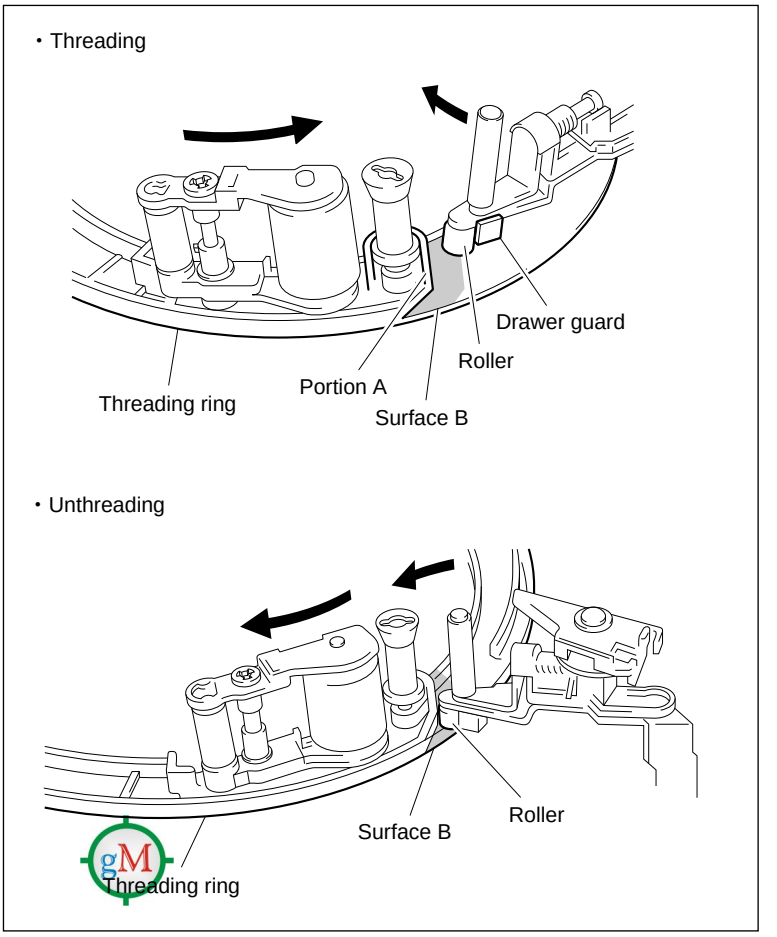
4. Confirm the T Drawer Assembly Operation

(1) When the threading ring rotates toward the threading end direction, check that the portion A of the threading ring push the roller of the T drawer assembly and the drawer guard certainly. And at this time, check that the lower surface of the roller does not come in contact with the surface B of the threading ring (shaded portion in the figure). (Specification.1)

If the specification 1 is not satisfied, adjust the height and the vertical play of the T drawer arm. (Refer to T drawer arm height adjustment.)

(2) When the threading ring rotates toward the unthreading end direction, check that the roller of the T drawer assembly moves inside of the threading ring smoothly. And at this time, check that the lower surface of the roller does not come in contact with the surface B of the threading ring (shaded portion in the figure). (Specification 2)

If the specification 2 is not satisfied, adjust the height and the vertical play of the T drawer arm. (Refer to T drawer arm height adjustment.)



Confirm the T Drawer Assembly Operation

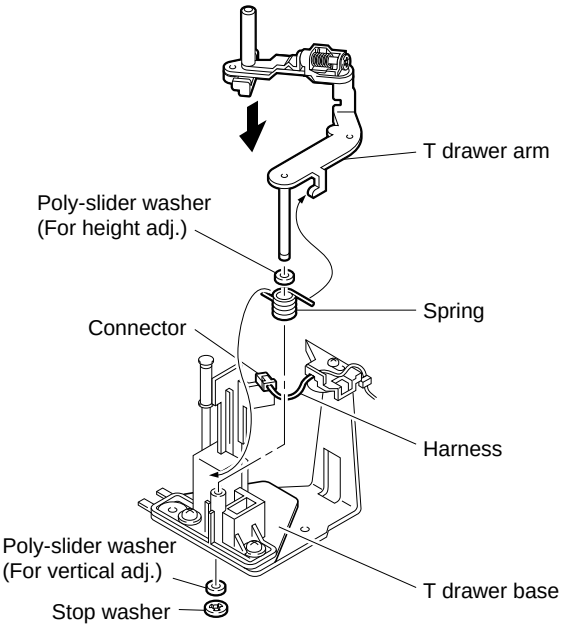
T Drawer Arm Height Adjustment

(1) Pass the T drawer arm through the T drawer base while passing the poly-slider washer and spring through the shaft of the T drawer arm.
(2) Hook the spring to the T drawer arm and the T drawer base.
(3) Connect the connector. Then pull the harness so that it should not come in contact with the T drawer arm.
(4) Press down the T drawer arm and check that the specification 1 is satisfied.

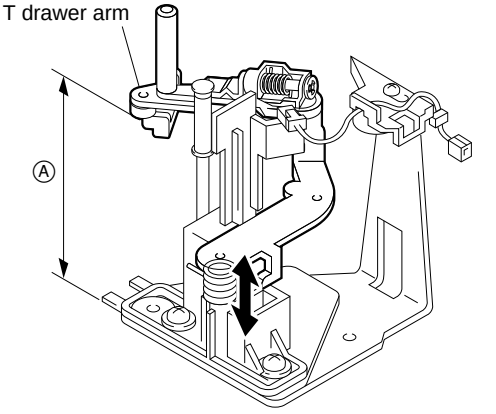
If the specification 1 is not satisfied, repeat steps ① to ③ until it is satisfied. (Height Adjustment)
① Remove the T drawer arm and the spring.
② Install or remove the poly-slider washer at the upper of the T drawer base.
③ Check again that the specification 1 is satisfied.

(5) Pass the poly-slider washer through the shaft, then fix the T drawer arm by the stop washer.
(6) Move the T drawer arm in the vertical direction. At this time, check that the vertical play satisfies the specification 2.

If the specification 2 is not satisfied, repeat steps ① to ③ until it is satisfied. (Vertical Play Adjustment)
① Remove the stop washer
② Install or remove the poly-slider washer at the lower of the T drawer base.
③ Fix the T drawer arm by the stop washer and check again that the specification 2 is satisfied.



* Tdrawer arm height adjustment/vertical play adjustment



Spec.1 : (Height)
Ⓐ = 36.3 to 36.7 mm
Spec.2 : (Vertical play)
Less than 0.2 mm

* If the specifications 1 and 2 are not satisfied:

• Poly-slider washer for adjustment

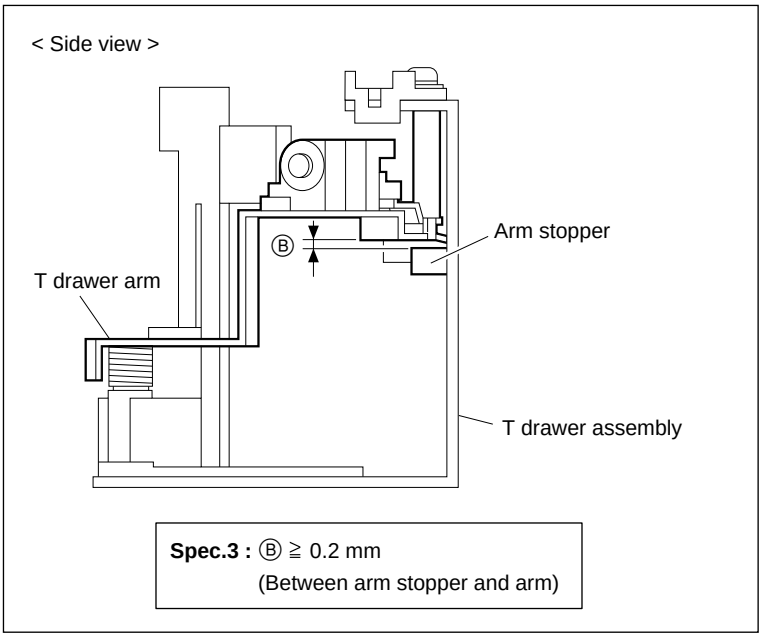
Diameter	Thickness	Parts No.
3.0 mm	0.13 mm	3-701-439-01
	0.25 mm	3-701-439-11
	0.5 mm	3-701-439-21

T Drawer Arm Height Adjustment

(7) Confirm that the height of the T drawer arm satisfies the specification 3 with the T drawer arm turned to clockwise by finger.
If specification 3 is not satisfied, perform the procedures (4) and later again.

Note

Some of the T drawer assemblies have no arm stopper. In these cases, the confirmation described above, step 7, is not required.



T Drawer Arm Height Adjustment

Adjustment after Replacement

5. Adjust the Slant Guide Slantness

Refer to Section 4-9.

3-7. Overall Block

3-7-1. Fan Motor Replacement

Outline

Replacement

1. Remove the Rear Panel (Refer to Section 1-7.)
2. Disconnect the Connector (CN254/EX-603 Board)
3. Remove the Fan Motor
4. Install the Fan Motor
5. Connect the Connector (CN254/EX-603 Board)
6. Install the Rear Panel (Refer to Section 1-7.)

Note

Adjustment after the fan motor replacement is not required.

Preparation

1. Turn the power off.

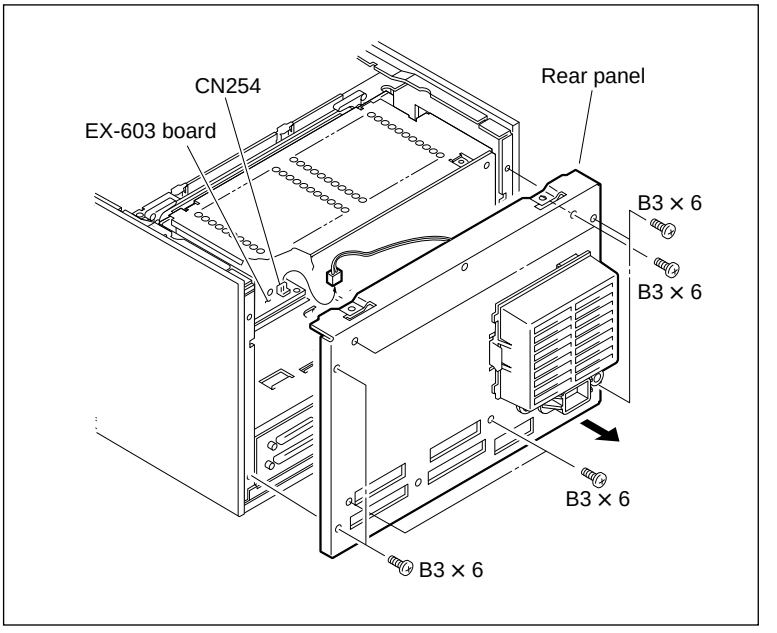
Removal

1. Remove the Rear Panel

Refer to Section 1-7.

2. Disconnect the Connector

Disconnect the connector CN254 on the EX-603 board.



Remove the Rear Panel

3. Remove the Fan Motor

Remove the two screws, then remove the fan motor.

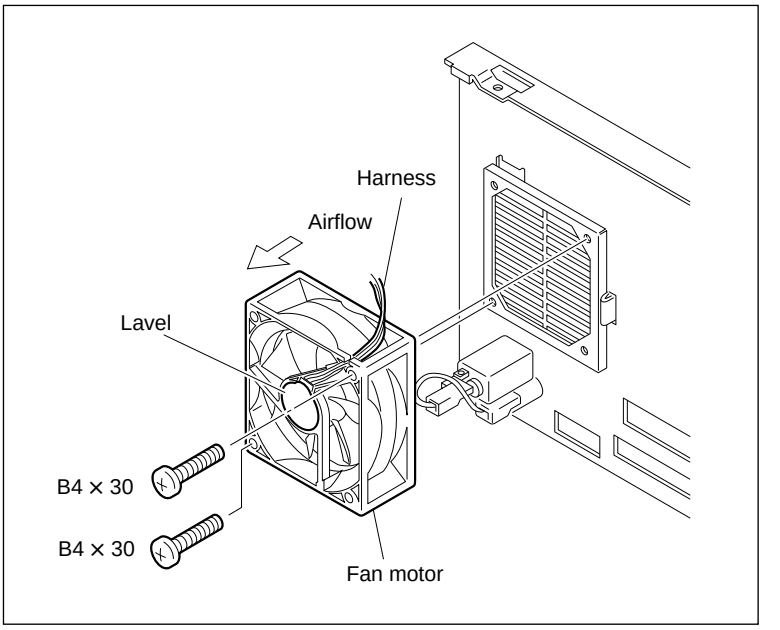
Installation

4. Install the Fan Motor

(1) Install a new fan motor as shown in the figure, and tighten the two screws.

Tightening torque : 1.0 N•m (10 kgf•cm)

(2) Adhere the harness to the fan panel by a filament tape.



Remove/Install the Fan Motor

5. Connect the Connectors

Connect the connector into CN254 on the EX-603 board.

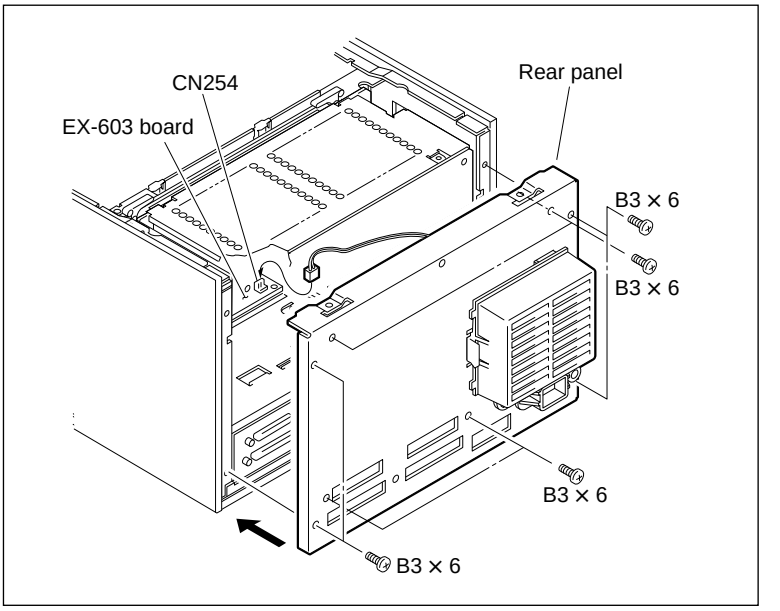
6. Install the Rear Panel

Refer to Section 1-7.

Tightening torque : 8×10^{-2} N•m (8 kgf•cm)

CAUTION

Be careful not to pinch the harness between the fan panel and the chassis.



Install the Rear Panel

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3-7-2. Air Filter Replacement

Outline

Replacement

1. Remove the Air Filter Assembly
2. Install the Air Filter Assembly

Note

Adjustment after the air filter assembly replacement is not required.

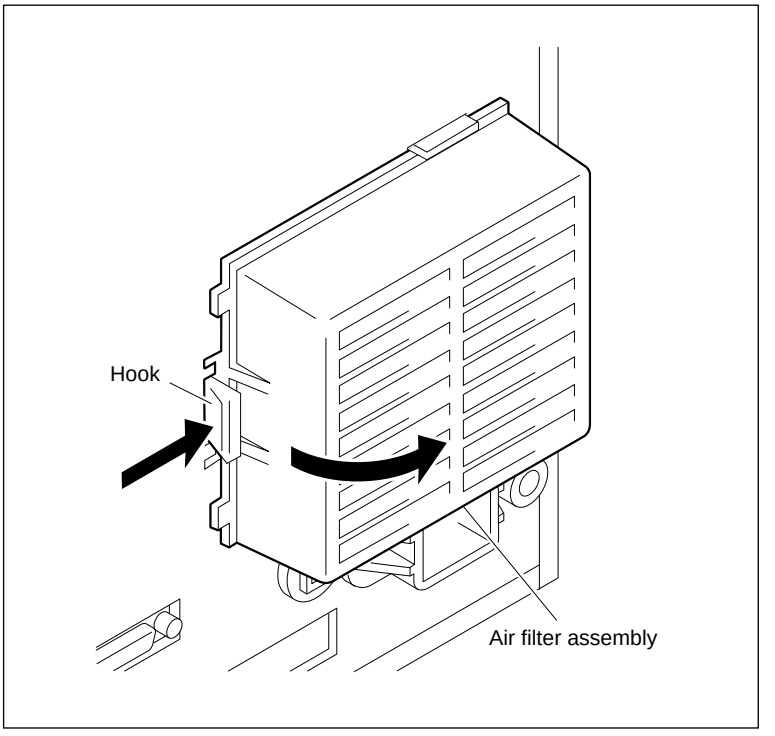
Preparation

1. Turn the power off.

Removal

1. Remove the Air Filter Assembly

Remove the air filter assembly from the rear panel while pressing the hook on the left in the direction of the arrow.

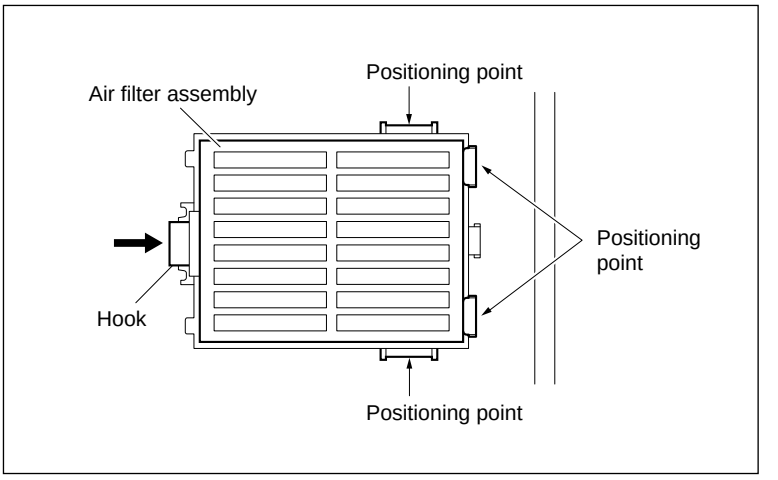


Remove the Air Filter Assembly

Installation

2. Install the Air Filter Assembly

Fit a new air filter assembly to the four positioning points on the rear panel, and attach the air filter assembly while pushing the hook.



Install the Air Filter Assembly

Section 4
Mechanical Alignment

4-1. General Information for Mechanical Alignment

1. Tape Cleaner

CAUTION

Never touch the edge of the tape cleaner with bare hands.
It is in danger of cutting your finger because the tape cleaner has a sharp edge.
Pay careful attention when replacing or adjusting the peripheral parts.

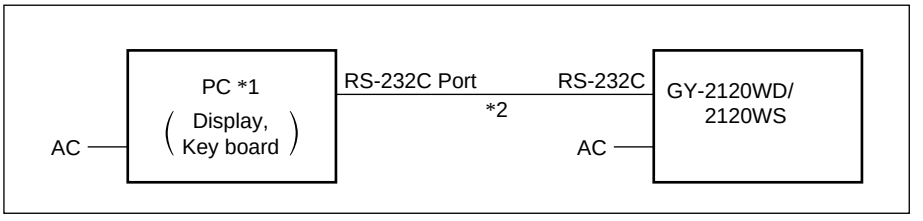
2. Tools

- Clean the surface of the tool with a cleaning cloth moistened with cleaning fluid before use it.

  - Cleaning cloth: 3-184-527-01
  - Cleaning fluid: 9-919-573-01

- Be careful not to damage the tool. If the flawed tool is used, adjustment cannot be performed correctly.

3. Connection (except measuring equipment)



*1: Refer to Section 6-1-1 regarding a PC (IBM PC/AT-compatible machine).
*2: Refer to Section 1-4 regarding an RS-232C cable.

IBM PC/AT is a registered trademark of IBM corporation.

4-2. Reel Motor Shaft Slantness Adjustment

Notes

- Be sure to check the slantness of the reel motor shaft when the reel motor assembly is removed or when the reel shift plate assembly is removed.
- Perform the reel motor shaft slantness adjustment correctly.
  If this adjustment is not performed correctly, a reel hub touches the case in a cassette tape, a noise occurs, and the tape does not run correctly. This may damage the tape.

Tools

- Cassette reference plate (L)(MW-088): J-6320-880-A
- Reel motor shaft slantness check tool (MW-087): J-6320-870-A
- Thickness gauge: 9-911-053-00
- Torque screwdriver (12 kg•cm) (JB-5252): J-6252-520-A
- Torque screwdriver's bit (+3 mm, l=50 mm): J-6323-430-A

Check

1. Install the Cassette Reference Plate (L)

Place the cassette reference plate (L) in the direction shown in the figure, then place it on two cassette supports.

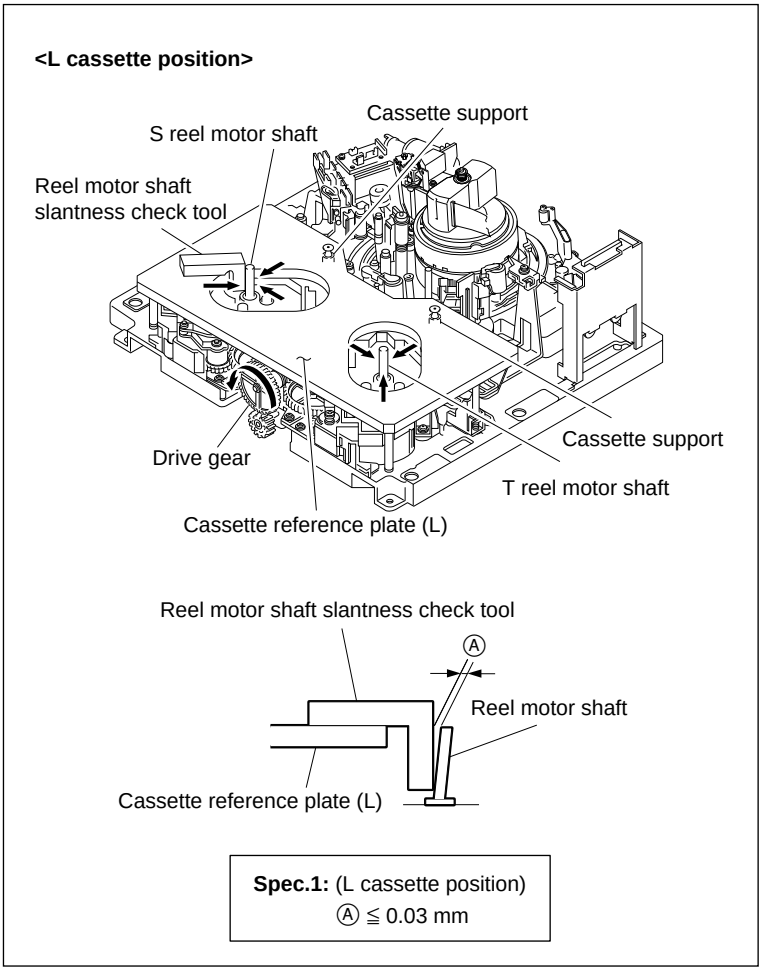
2. Place the Reel Shift Plate Assembly in the L Cassette Position

Rotate the drive gear counterclockwise as far as it will go.

3. Check the Slantness in the L Cassette Position

(1) Press the check tool against the reel motor shaft from the directions indicated by the arrow.
(2) Check that the clearance between the reel motor shaft and tool satisfies specification 1.

If the specification is not satisfied, perform steps 6 through 10.



Reel Motor Shaft Slantness Check (L)

4. Place the Reel Shift Plate Assembly in the S Cassette Position

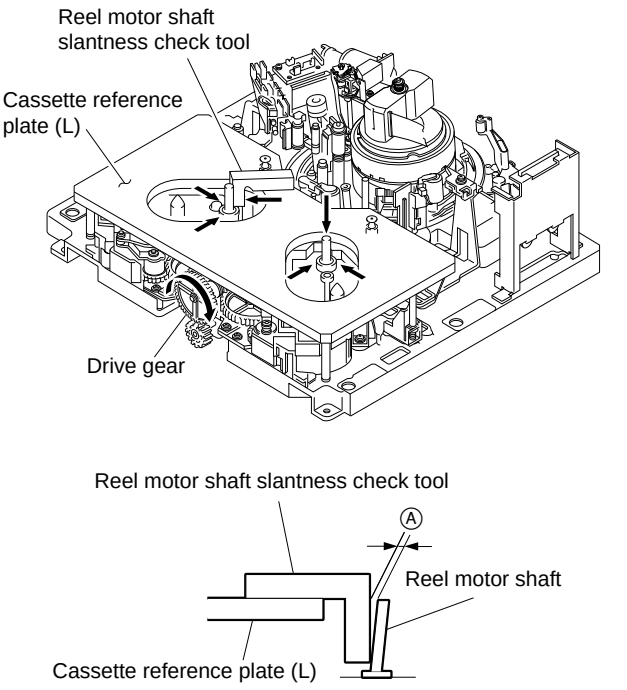
Rotate the drive gear clockwise as far as it will go.

5. Check the Slantness in the S Cassette Position

(1) Press the check tool against the reel motor shaft from the directions indicated by the arrow.
(2) Check that the clearance between the reel motor shaft and tool satisfies specification 2.

If the specification is not satisfied, perform steps 6 and later.

<S cassette position>



Spec.2: (S cassette position)
Ⓐ ≦ 0.1 mm

Reel Motor Shaft Slantness Check (S)

Adjustment

6. Loosen Screws

Loosen the three screws fixing the reel motor by one to two turns.

7. Bend Spacer

Bend the adjustment spacer as shown in the figure.

8. Insert Spacer

Insert the adjustment spacer into the square hole on the upper surface of the reel shift plate assembly with tweezers.

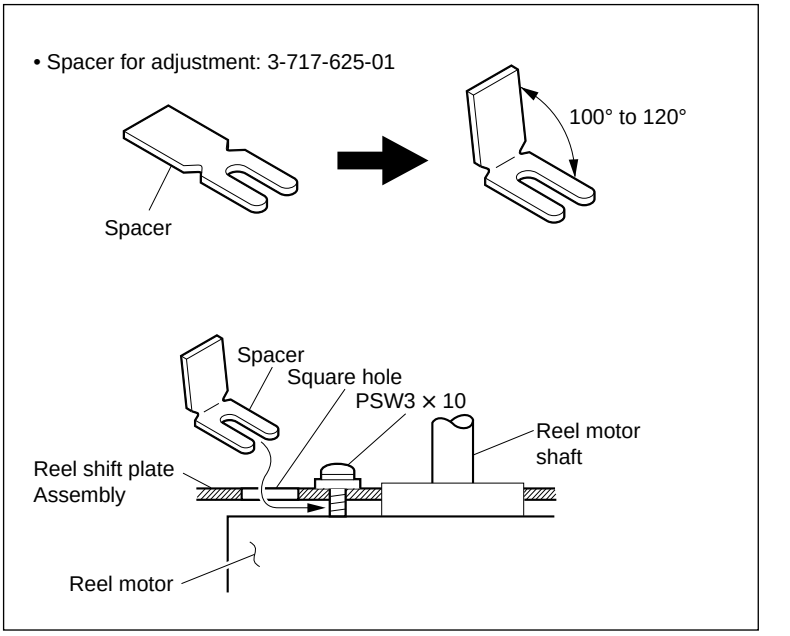
9. Tighten Screws

Gradually tighten the three screws loosened in step 6.

Tightening torque: 68.6×10^{-2} N•m(7 kgf•cm)

10. Recheck the Reel Motor Shaft Slantness

Refer to steps 2 through 5.



Reel Motor Shaft Slantness Adjustment

4-3. Cassette Pillar Height Adjustment

Note

- Be sure to check the height of the cassette pillars when the reel shift plate assembly is removed.

Tools

- Cassette reference plate (L)(MW-088): J-6320-880-A
- Adjustment mirror (circular): J-6080-029-A
- L-shaped wrench (1.5 mm): 7-700-736-05

Check

1. Install the Cassette Reference Plate (L)

Place the cassette reference plate (L) in the direction shown in the figure, then place it on two cassette supports.

2. Place the Reel Shift Plate Assembly in the Intermediate Position of S and L Cassette

(1) Rotate the drive gear and place the reel shift plate assembly in the intermediate position of S and L cassettes.

Note

The reel shift plate assembly should be moved to the position where the cassette pillars do not appear from the hole of the reference plate.

(2) Check that the S and T cassette pillars are positioned under the reference plate.

3. Check the Cassette Pillar Height

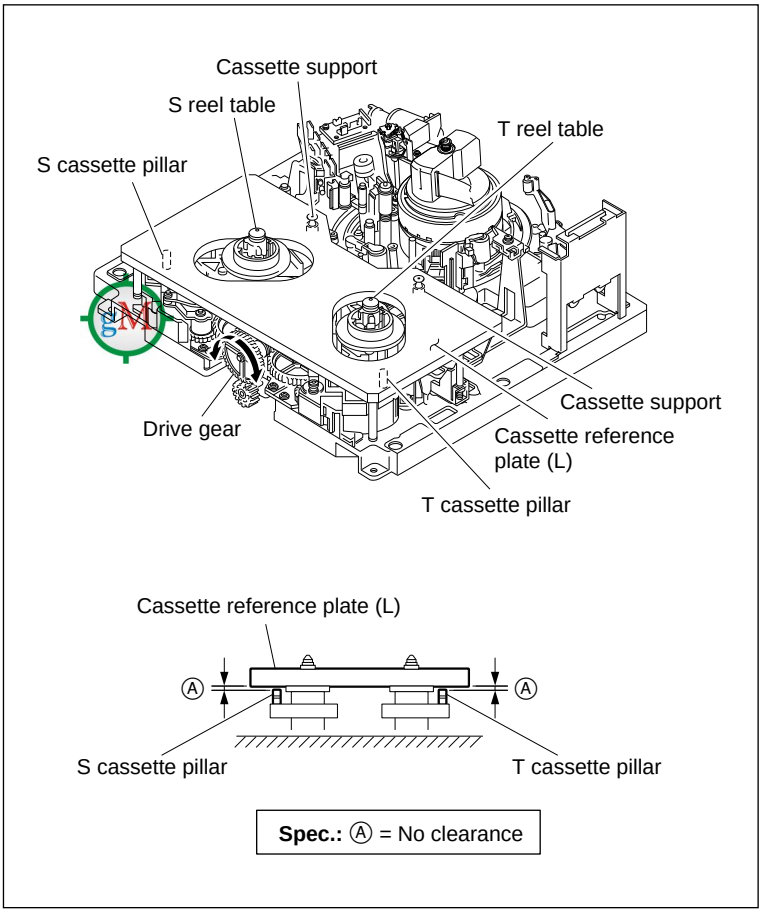
(1) Turn the reference plate over and place it on the cassette pillars.

Note

The reference plate should be turned over because it has a concave portion at the back and cannot be adjusted correctly.

(2) Check with an adjustment mirror that there are no clearances between the S and T cassette pillars and the reference plate.

If the specification is not satisfied, perform steps 4 through 6.



Cassette Pillar Height Check

Adjustment

4. Loosen Fixing Screw

Loosen the fixing screw of the S or T cassette pillar by one to two turns.

5. Adjust the Cassette Pillar Height

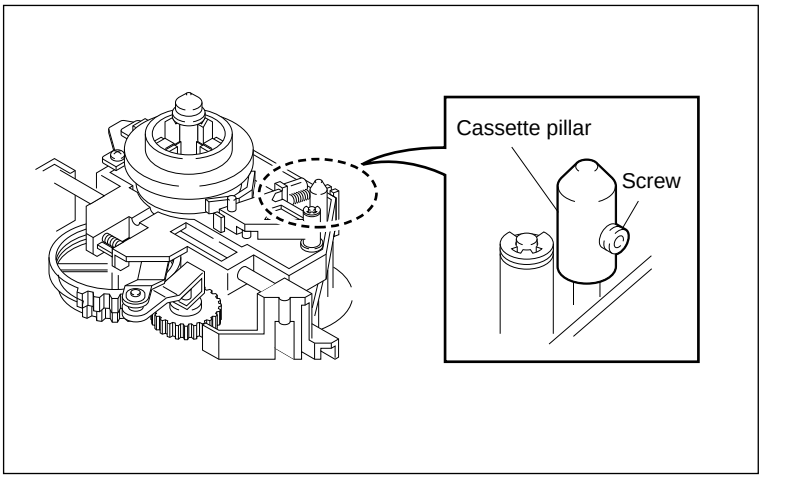
Lift the cassette pillars and press them slightly against the lower surface of the reference plate. Tighten the fixing screw under this condition.

6. Recheck the Cassette Pillar Height

Check that the height of the S and T cassette pillars satisfies the specification.

CAUTION

Shift the tightening position of the fixing screw when performing readjustment with the specification not satisfied. (Do not tighten the screw in the same position as previous.)



Cassette Pillar Height Adjustment

4-4. Reel Table Height Adjustment

Notes

- Be sure to check the height of the reel table when a reel table is removed or when it is replaced.
- Perform the reel table height adjustment correctly.
  The height of the reel table is used as the reference for the tape path.

Tools

- Cassette reference plate (L)(MW-088): J-6320-880-A
- Reel table height gauge (MW-935): J-6329-350-A
- L-shaped wrench (1.5 mm): 7-700-736-05

Check

1. Install the Cassette Reference Plate (L)

Place the cassette reference plate (L) in the direction shown in the figure, then place it on two cassette supports.

2. Place the Reel Shift Plate Assembly in the L Cassette Position

Rotate the drive gear counterclockwise as far as it will go.

3. Check the Take-up Reel Table Height

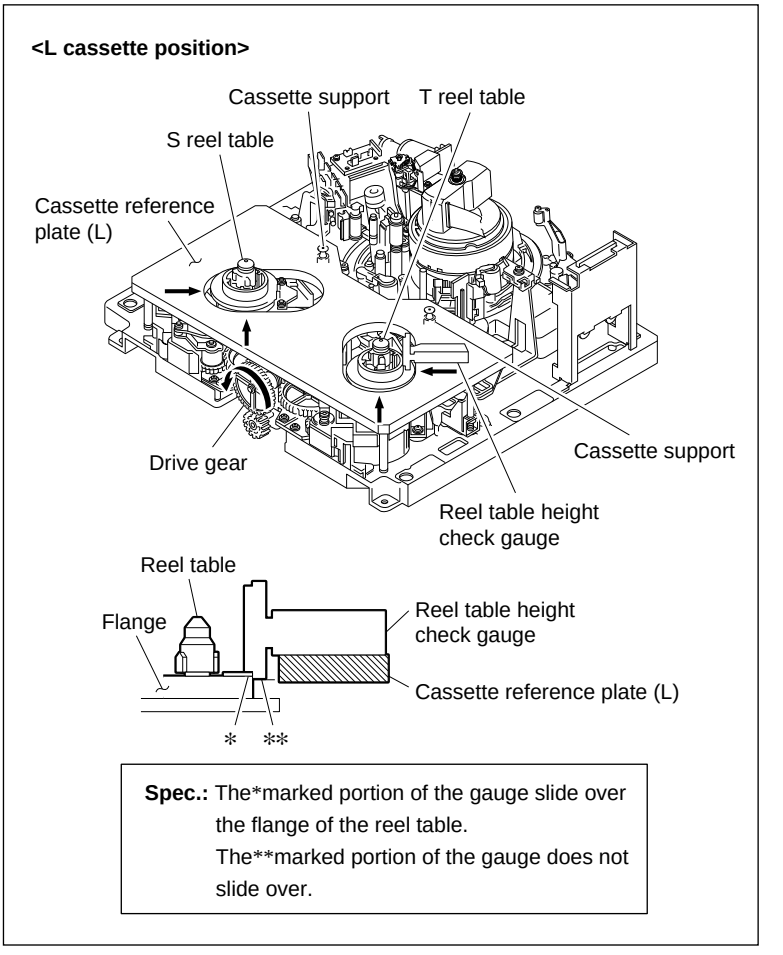
(1) Press the “T”-stamped side of the gauge against the take-up reel table from the directions indicated by the arrow.
(2) Check that the specification is satisfied while rotating the take-up reel table clockwise by one turn.

If the specification is not satisfied, perform steps 7 and 8.

4. Check the Supply Reel Table Height

(1) Press the “S”-stamped side of the gauge against the supply reel table from the directions indicated by the arrow.
(2) Check that the specification is satisfied while rotating the supply reel table counter-clockwise by one turn.

If the specification is not satisfied, perform steps 7 and 8.


<L cassette position>
Cassette support
T reel table
S reel table
Cassette reference plate (L)
Drive gear
Cassette support
Reel table height check gauge
Reel table
Flange
Reel table height check gauge
Cassette reference plate (L)
* **
Spec.: The*marked portion of the gauge slide over the flange of the reel table.
The**marked portion of the gauge does not slide over.

Reel Table Height Check (L)

5. Place the Reel Shift Plate Assembly in the S Cassette Position

Rotate the drive gear clockwise as far as it will go.

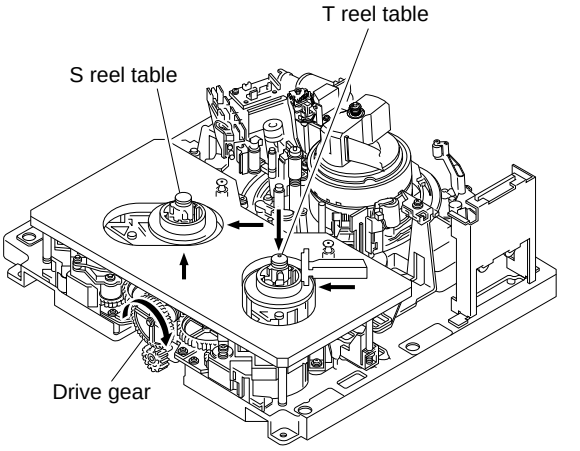
6. Check the Supply and Take-up Reel Table Height

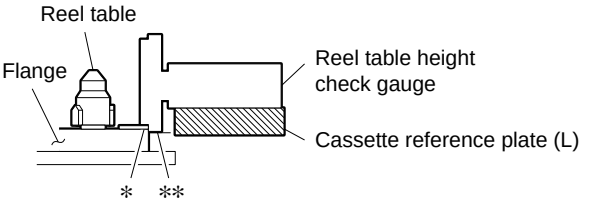
Perform in the same way as in steps 3 and 4.

If the specification is not satisfied, perform steps 7 and later.

If the specifications are satisfied in both the L and S cassette positions, perform steps 9 and later.

<S cassette position>





Spec.: The*marked portion of the gauge slide over the flange of the reel table.
The**marked portion of the gauge does not slide over.

Reel Table Height Check (S)

Adjustment

7. Remove the Reel Table

8. Adjust the Number of Poly-slider Washers

Adjust the number of poly-slider washers installed in the reel motor shaft so that the specifications are satisfied in both the L and S cassette positions.

9. Remove the Cassette Reference Plate (L)

Remove the cassette reference plate (L) and reel table height gauge.

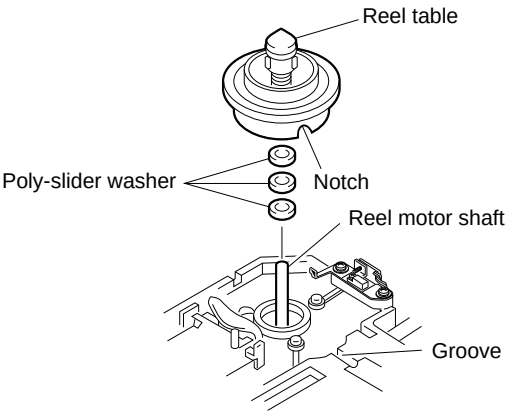
10. Tighten the Screws of the Reel Table Assembly

(1) Align the notch at the bottom of the reel table assembly with the groove position of the reel shift plate assembly.

(2) Insert an L-shaped wrench into the notch at the bottom of the reel table assembly along the groove of the reel shift plate and tighten the two screws.

11. Recheck the Reel Table Height

Refer to steps 2 through 6.



• Poly-slider washer for adjustment

Diameter	Thickness	Part No.
4 mm	0.05 mm	3-188-108-01
	0.13 mm	3-701-441-01
	0.25 mm	3-701-441-11
	0.5 mm	3-701-441-21

Reel Table Height Adjustment

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4-5. Reel Brake Clearance Check

Note

- Be sure to check clearance of the reel brake when the reel table assembly is removed or when it is replaced.

Check

1. Check the Take-up Reel Brake Clearance

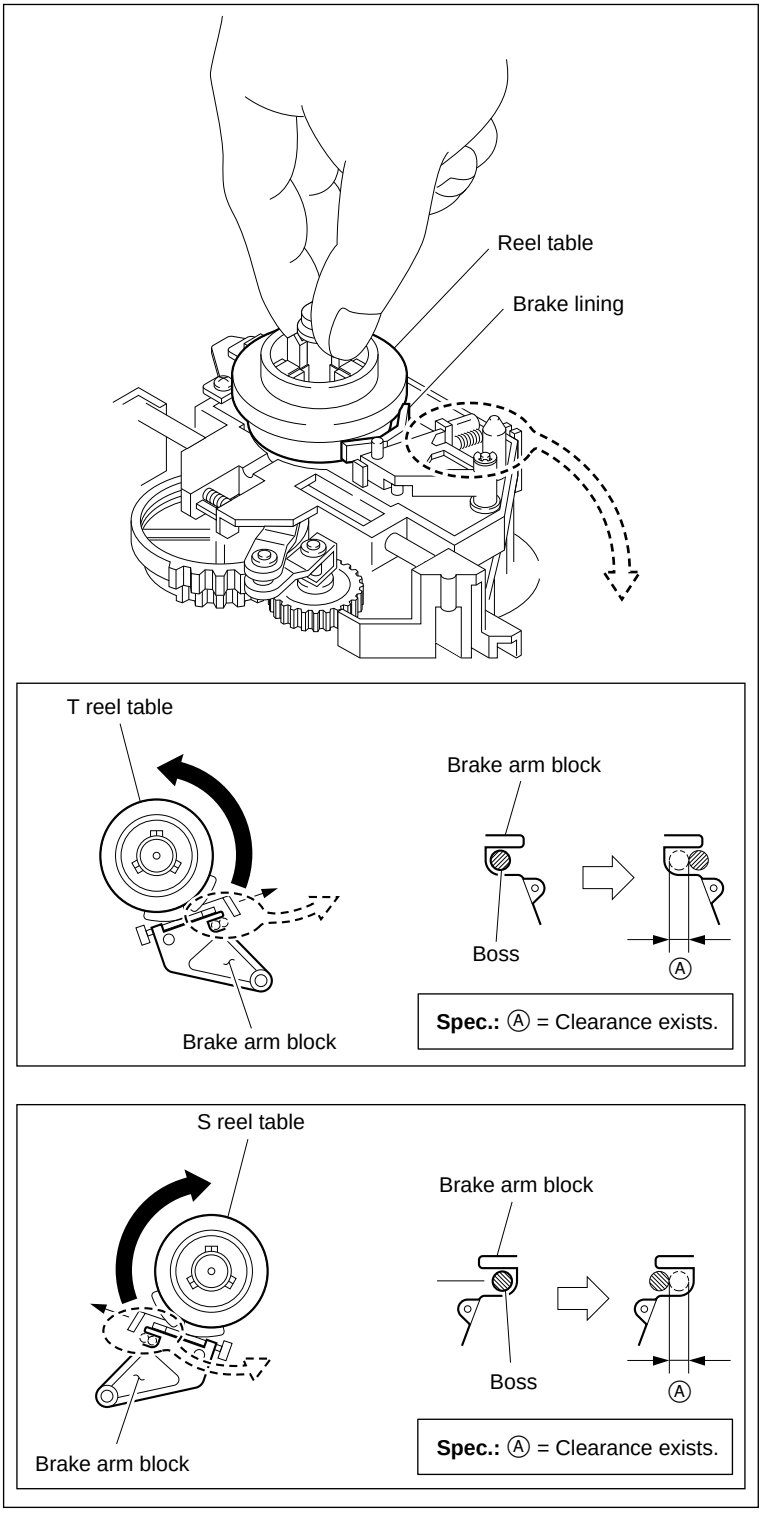
Rotate the take-up reel table counterclockwise by fingers.
At that time, check that a clearance occurs between the brake arm block and boss.

If no clearance occurs, replace the brake lining. (Refer to Section 3-2-2.)

2. Check the Supply Reel Brake Clearance

Rotate the supply reel table clockwise by fingers.
At that time, check that a clearance occurs between the brake arm block and boss.

If no clearance occurs, replace the brake lining. (Refer to Section 3-2-2.)



Reel Brake Clearance Check

4-6. Reel Brake Release Amount Adjustment

Notes

- Be sure to check the release amount of the reel brake when the reel table assembly is removed or when it is replaced.
- Be sure to check the following when performing adjustment with the specification not satisfied.
  (1) Cassette pillar height check (Refer to Section 4-3.)
  (2) Reel table height check (Refer to Section 4-4.)

Basic knowledge

The brake lining is pressed against the reel table when the power is off.
When the power is turned on, the brake lining is released.

Tool

- Wire clearance check gauge set: J-6152-450-A

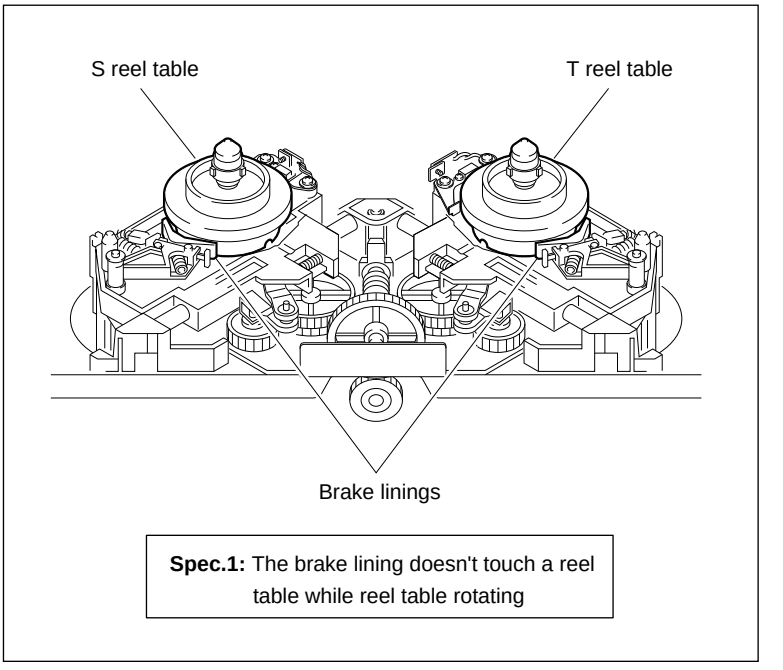
Check

1. Turn the Power On

2. Check the Brake Release Amount

Check on the supply and take-up sides that the brake lining does not touch the reel table while a reel table is rotating. (Specification 1)

If specification 1 is not satisfied, perform steps 3 and later.



Reel Brake Release Amount Check

Adjustment

3. Turn the Power Off

4. Remove the Reel Shift Plate Assembly

Refer to steps 1 through 4 in Section 3-2-3.
(It is not necessary to remove a reel table.)

5. Loosen the Screws Fixing the Brake Solenoid

Loosen the two screws (PSW3 × 6) fixing the brake solenoid.

6. Adjust the Brake Solenoid Position

Press down the iron core of the brake solenoid to the energized position.
At that time, adjust the brake solenoid position so that the clearance between the brake lining and reel table satisfies specification 2.

Note

Press down only the iron core by a sharp-pointed stick.
Do no touch other portions.

Know-how:

- Shift the brake solenoid upward.
  → Clearance A is narrowed.

- Shift the brake solenoid downward.
  → Clearance A is widened.

7. Tighten the Screws Fixing the Brake Solenoid

Tighten the two screws loosened in step 5.

8. Recheck the Brake Release Amount

Refer to step 6.

9. Install the Reel Shift Plate Assembly

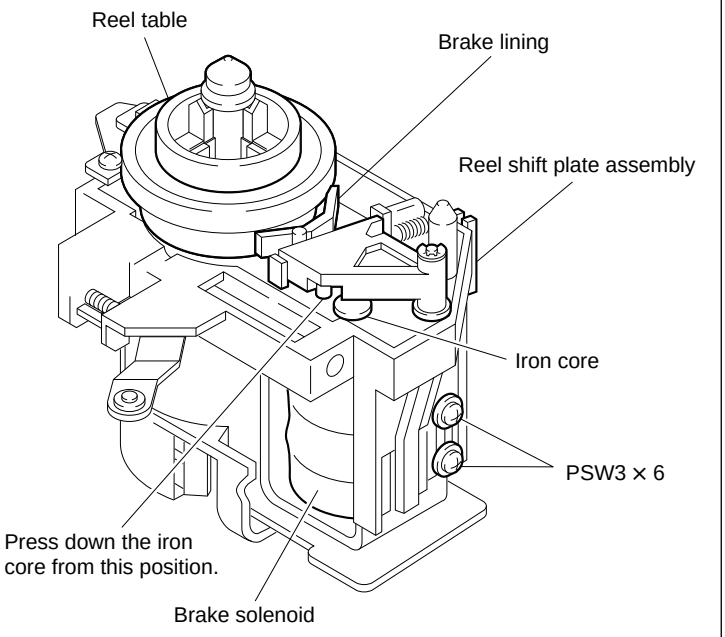
Refer to steps 7 through 10 in Section 3-2-3.
(It is not necessary to smear grease again to the slide shaft or to apply oil again to the crank arm (A).)

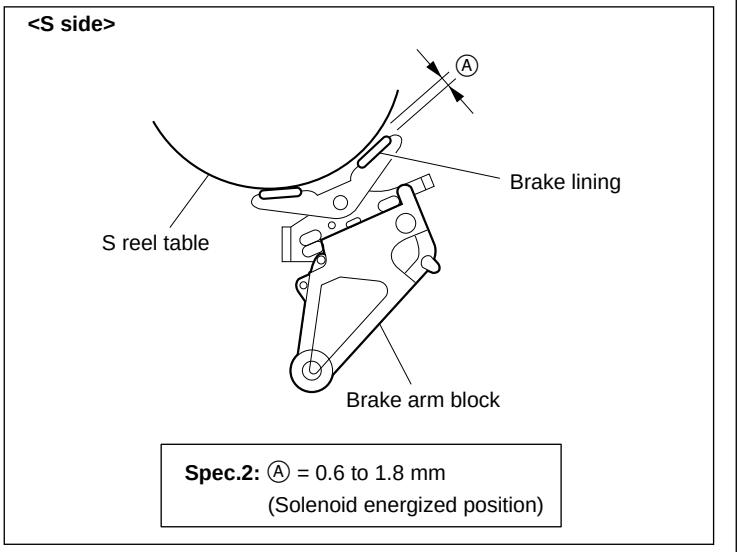
10. Check the Cassette Pillar Height

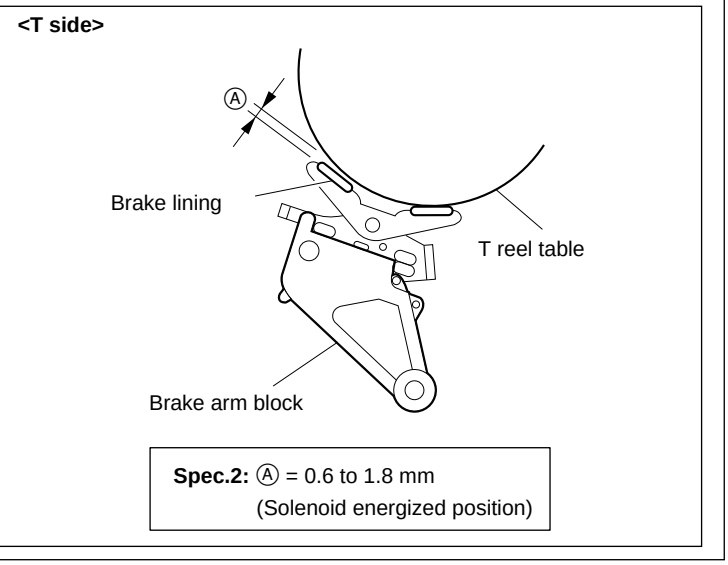
Refer to Section 4-3.

11. Check the Reel Table Height

Refer to Section 4-4.







Reel Brake Release Amount Adjustment

4-7. Reel Table Rotation Sensor Position Adjustment

Note

- Be sure to check the position of the reel table rotation sensor when a reel table is replaced.
- Tape running operation
  The tape operation in the adjustment procedure is performed using the PC.
  Refer to Section 1-10 for details of the operation.

Equipment

- Oscilloscope

* For connection of these equipment, refer to Section 4-1.

Tools

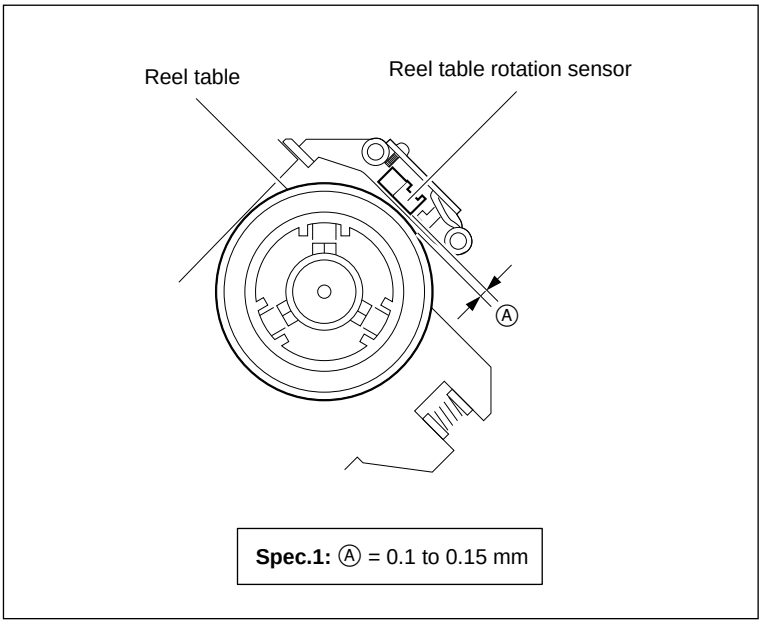
- Thickness gauge: 9-911-053-00
- L-shaped wrench (2 mm): 7-700-736-03
- Torque screwdriver (6 kg•cm)(JB-5251): J-6252-510-A
- Torque screwdriver's hexagonal bit (d=2 mm, l=75 mm): J-6323-500-A
- DTF cassette tape (L cassette)

Check

1. Check the Reel Table Rotation Sensor Clearance

Check that the clearance between the reel table and the reel table rotation sensor satisfies the specification 1.

If the specification 1 is not satisfied, perform steps 4 and later.



Reel Table Rotation Sensor Clearance Check

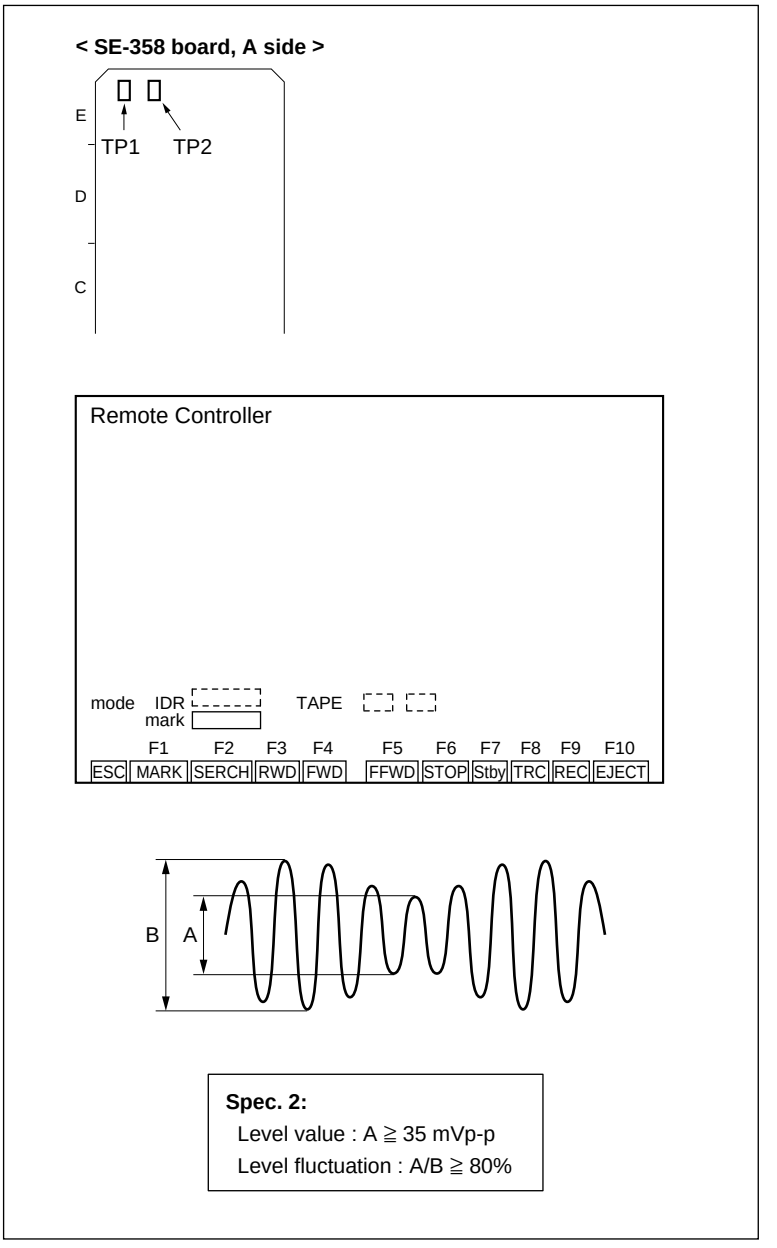
2. Connect the Oscilloscope

S side: TP1/SE-358 board (S-FG signal)
T side: TP2/SE-358 board (T-FG signal)
(Range: 10 ms/DIV)

3. Check the Reel FG Output Level

(1) Set the L cassette tape and put a proper weight on the cassette tape so that it does not rise up.
(2) Turn the power on.
(3) Put the unit into the F FWD mode, and check that the reel FG output level satisfies the specification 2.

If the specification 2 is not satisfied, perform steps 4 and later.



Reel FG Output Level Check

Adjustment

4. Loosen the Screw

Loosen the hexagonal screw by 1/4 to 1/2 turn.

5. Adjust the Reel Table Rotation Sensor Position

(1) Insert the thickness gauge (t=0.13 mm) between the reel table rotation sensor and the reel table.
(2) Push the portion A shown in the figure with fingers, and gently bring the reel rotation sensor into contact with the thickness gauge.

6. Tighten the Screw

Tighten the hexagonal screw loosened in step 4.

Tightening torque: 49×10^{-2} N•m (5 kgf•cm)

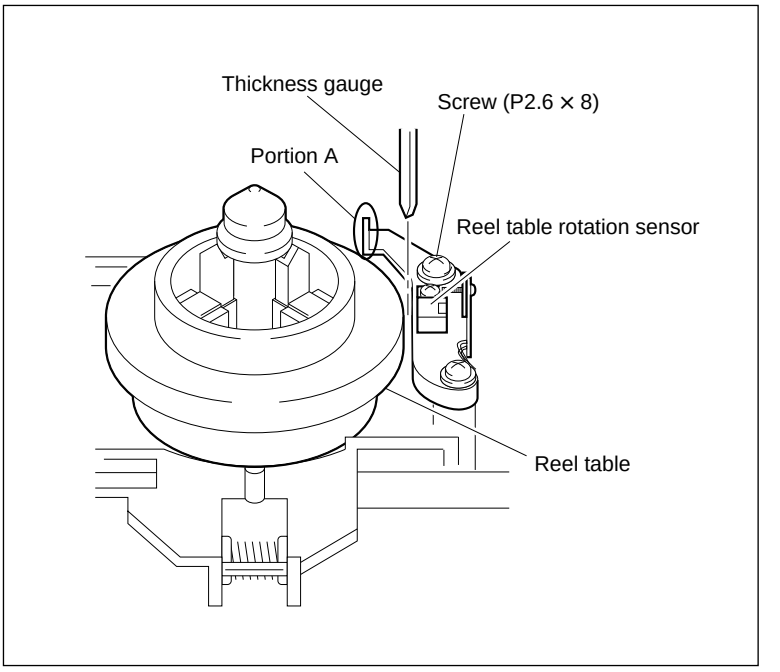
7. Remove the Thickness Gauge

CAUTION

Be careful not to damage the reel flange and the reel table rotation sensor.

8. Recheck the Reel Table Rotation Sensor Position

(1) Insert the thickness gauge (t=0.1 mm) between the reel table rotation sensor and the reel table.
(2) Rotate the reel table, and check that it rotates smoothly.
(3) Recheck that the specifications 1 and 2 are satisfied referring to steps 1 through 3.



Reel Table Rotation Sensor Position Adjustment

4-8. Pinch Press Clearance Adjustment

Note

• Be sure to check the clearance during pinch press when the pinch press assembly is removed.

Equipment

• Personal computer (PC)

* For connection of these equipment, refer to Section 4-1.

Tool

• Wire clearance check gauge set: J-6152-450-A

Check

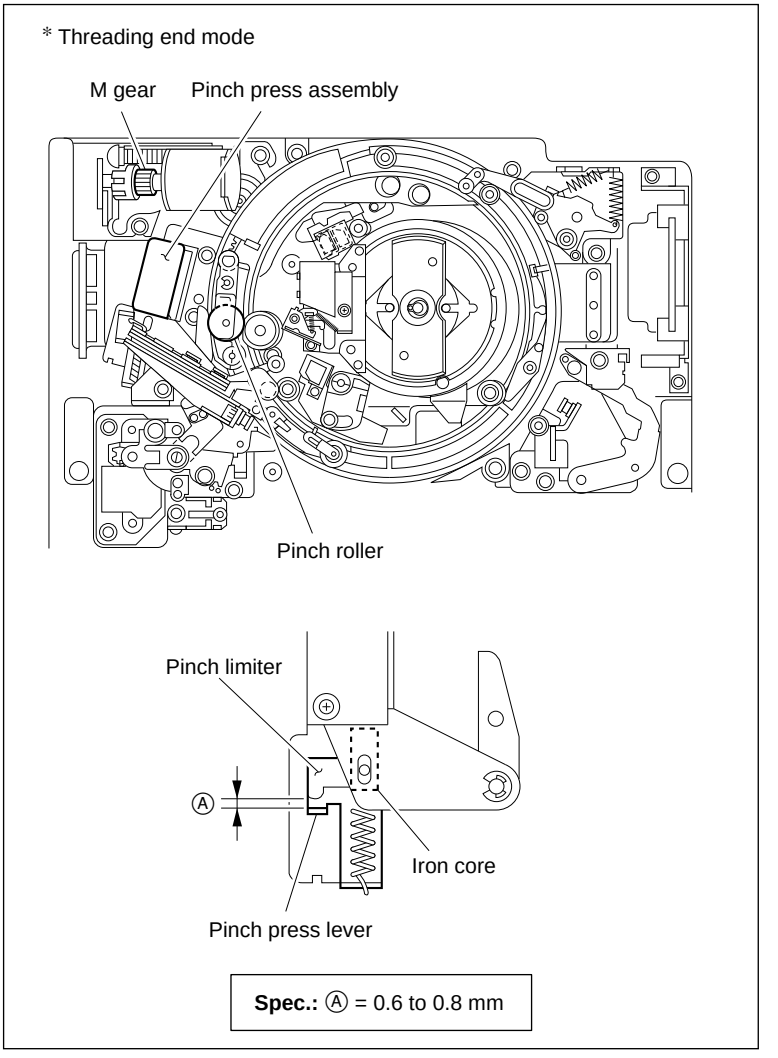
1. Put the Pinch Solenoid into the Energized State

Enter “SV18: Pinch Roller Solenoid Check”. (Refer to Section 6-2.)

2. Check the Pinch Press Clearance

Check that the clearance between the pinch limiter and pinch press lever satisfies the specification.

If the specification is not satisfied, perform steps 3 and later.



Pinch Press Clearance Check

Adjustment

3. Loosen Screws

Loosen the two screws (PSW3 × 8) fixing the pinch press assembly by 1/2 to one turn.

4. Adjust the Pinch Press Assembly Position

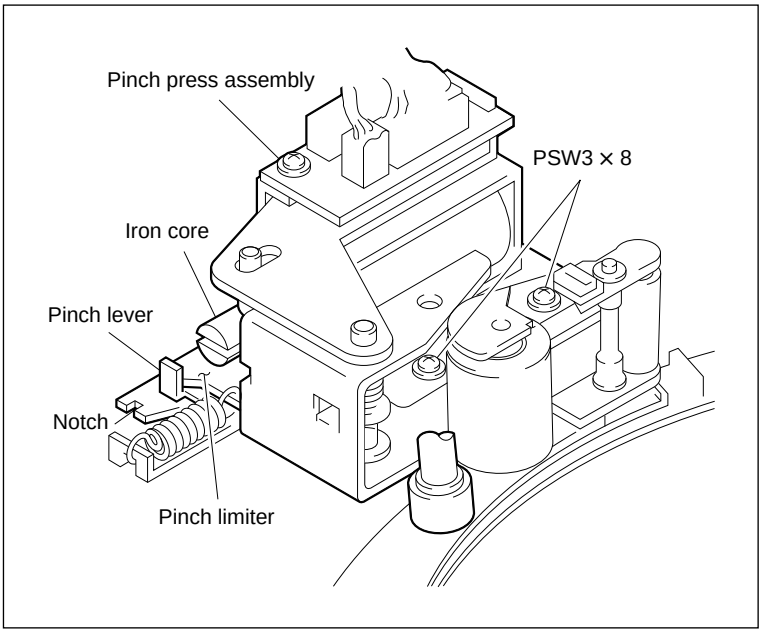
Put the pinch solenoid into the energized state, then insert the tip of a 3 mm flat-blade screwdriver into the notch of the pinch press assembly and adjust the pinch press assembly position so that the specification is satisfied.

5. Tighten Screws

Tighten the two screws loosened in step 3.

6. Recheck the Pinch Press Clearance

Refer to steps 1 and 2.



Pinch Press Clearance Adjustment

4-9. Slant Guide Slantness Adjustment

Note

- Be sure to adjust the slant guide slantness not only when the T drawer arm is replaced but also when the slant guide is replaced.
- Tape running operation
  The tape operation in the adjustment procedure is performed using the PC.
  Refer to Section 1-10 for details of the operation.

Tools

- Cassette reference plate (L)(MW-088): J-6320-880-A
- Tension regulator slantness check tool (BW-080): J-6190-800-A
- Thickness gauge: 9-911-053-00
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Locking compound: 7-432-114-11
- DTF cassette tape (L cassette)

Check

1. Install the Cassette Reference Plate (L)

Place the cassette reference plate (L) in the direction shown in the figure, then place it on two cassette supports.

2. Check the Slant Guide Slantness

(1) Press the check tool against the slant guide from the directions indicated by the arrow A and B.
(2) Check that the clearance between the slant guide and tool satisfies specifications 1 and 2.

If the specifications 1 and 2 are not satisfied, repeat steps ① and ② until they are satisfied.

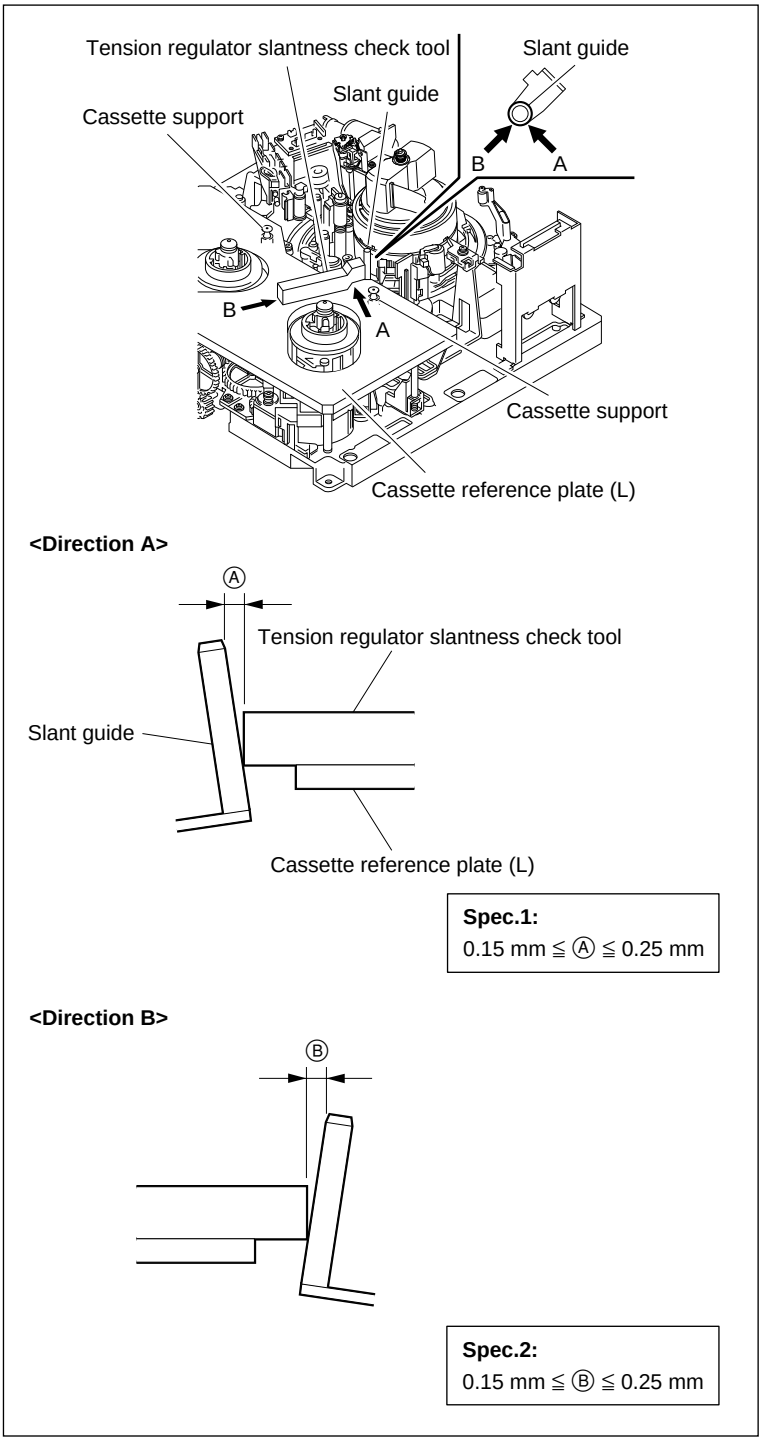
① Bend the slant guide so that both specifications 1 and 2 are satisfied.
② Check again that the specifications 1 and 2 are satisfied after putting the unit into the threading end mode and the unthreading end mode.

3. Remove the Cassette Reference Plate (L)

Remove the cassette reference plate (L) and tension regulator slantness check tool.

4. Cleaning

Clean the slant guide with a cleaning piece moistened with cleaning fluid.



Slant Guide Slantness Check

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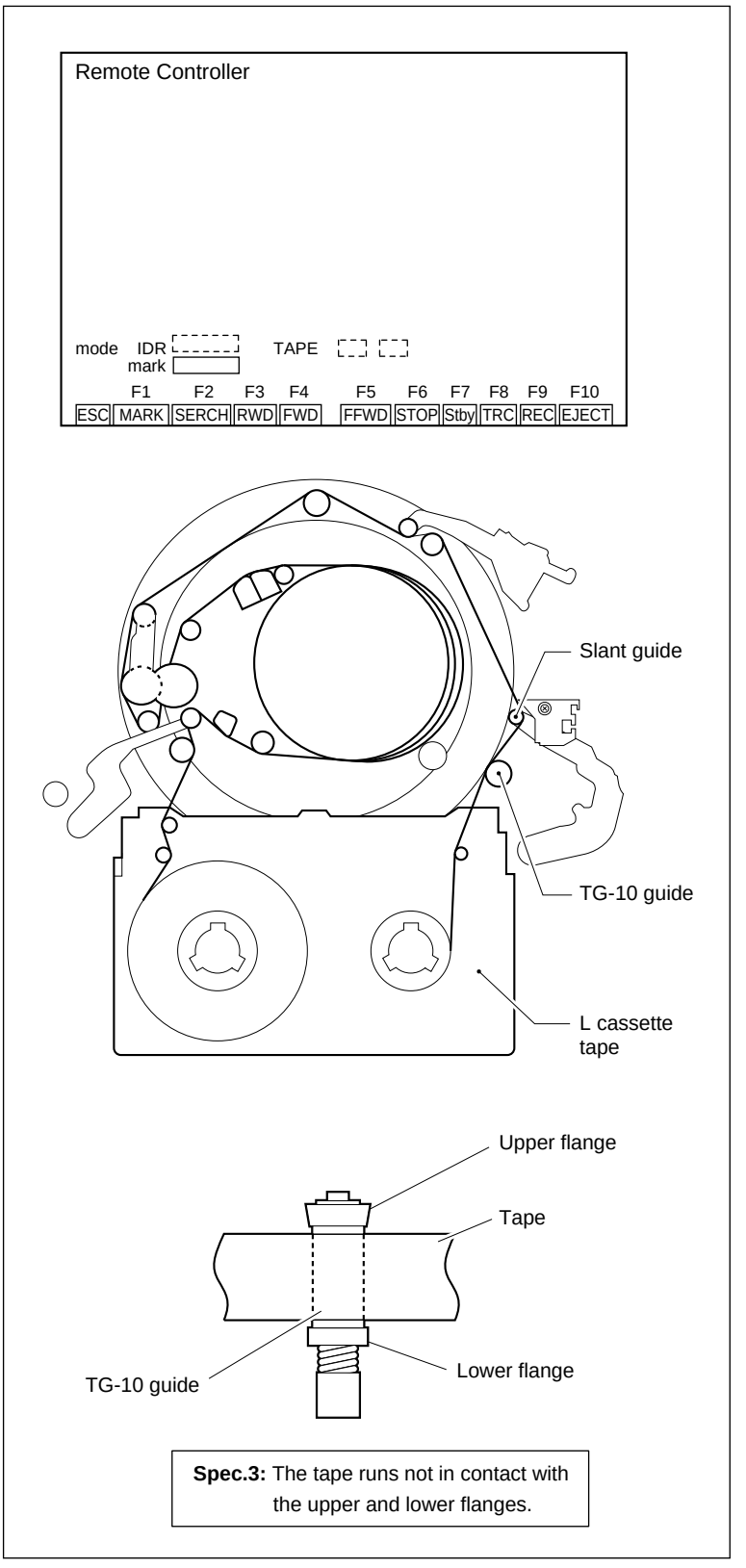
5. Set the L Cassette Tape

(1) Place the reel shift plate assembly in the L cassette position.
(2) Set the L cassette tape and put a weight on the cassette so that it does not rise up.

6. Check the Tape Running at TG-10 Guide

(1) Put the unit into F FWD mode once. About three seconds later, put the unit into PLAY mode.
(2) Check that the tape running condition satisfies specification 3 at TG-10 guide.

If the specification 3 is not satisfied, perform step 7 and later.



Tape Running Check at TG-10 Guide

Adjustment

7. Loosen the screw

Loosen the fixing screw of the adjustment plate by 1/4 to 1/2 turn.

8. Adjust the Slant Guide Slantness

(1) Insert a 3 mm flatbladed screwdriver into the notch of the adjustment plate.

(2) Adjust the slantness of the slant guide so that specification 3 is satisfied.

- If the tape runs in contact with the upper flange of TG-10:
  Move the adjustment plate in the direction indicated by the arrow A.
- If the tape runs in contact with the lower flange of TG-10:
  Move the adjustment plate in the direction indicated by the arrow B.

9. Tighten the Screw

Tighten the screw loosened in step 7.

10. Recheck the Tape Running at TG-10 Guide

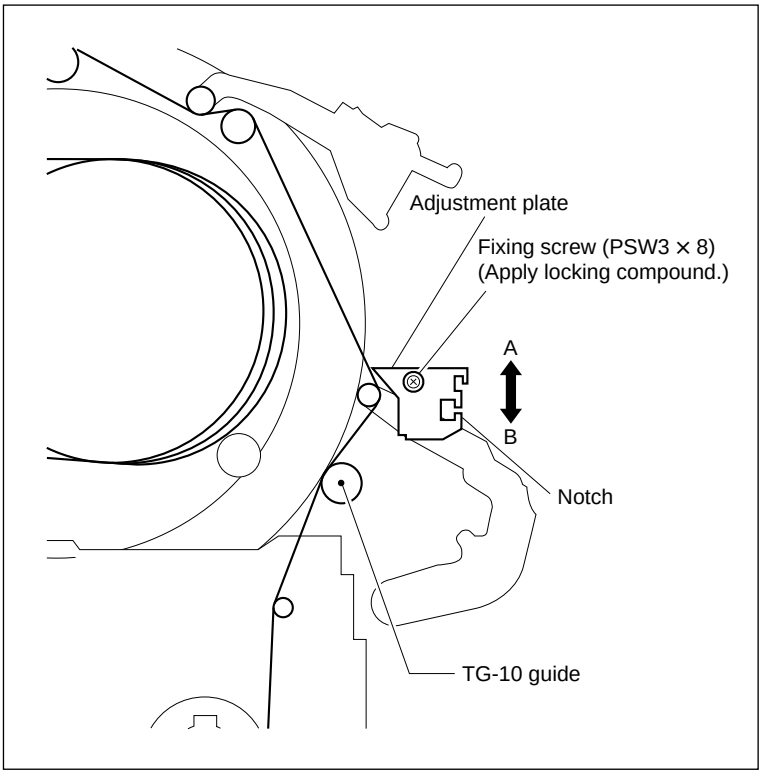
(1) Put the unit into the unthreading end mode.

(2) Then put the unit into PLAY mode, and check again that the tape running condition satisfies specification 3 at TG-10 guide.

If the specification 3 is not satisfied, repeat steps 7 through 10 mentioned above.

11. Apply Locking Compound

Apply locking compound to the fixing screw of the adjustment plate.



Slant Guide Slantness Adjustment

Section 5
Tape Path Alignment

5-1. Genaral Information for Tape Path Adjustment

5-1-1. Notes

(1) Cassette compartment
- The tape path adjustment should be performed under the state that the cassette compertment is removed. If not, some checks and adjustments may be impossible.
  (For the removal of the cassette compartment, refer to Section 1-1-2.)
- When the tape path adjustment is performed with the cassette compartment removed, the tape protection circuit is activated and the “ERROR” message may be displayed. In this case, turn the power off, then turn it on again.

(2) Cassette tape

When setting the cassette tape or the alignment tape on the unit, put it to the cassette supports on the mechanical deck. And then, put a weight on the cassette so that it does not rise up. The weight about 1000 g is suitable.

(3) Tape running operation

The functional operation described in the adjustment procedures Sections 5-3 and later is performed using a PC. The “xx mode” in the adjustment procedures indicates the state in which the corresponding key or command is executed from the PC.
For more details of the operation, refer to Section 1-10.

5-1-2. Preparation

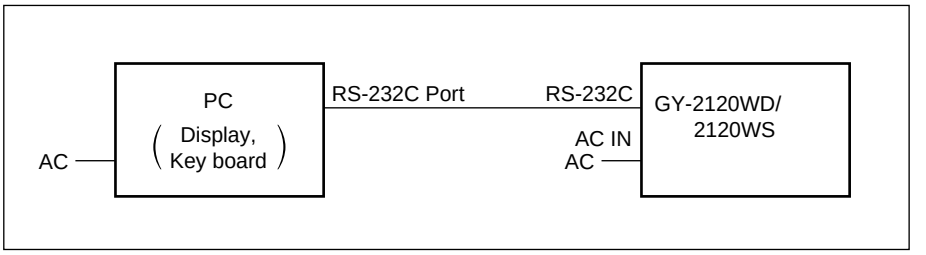
(1) Remove the upper lid and plate MD assembly. (Refer to Section 1-1-1.)
(2) Remove the cassette compartment. (Refer to Section 1-1-2.)
(3) Remove the rotary head cleaner. (Refer to Section 3-3-4.)

Note

If the rotary head cleaner assembly is installed, the tape running condition may be difficult to check. Therefore, remove the rotary head cleaner assembly before checking.
(For the removal of the rotary head cleaner assembly, refer to Section 3-4-2.)

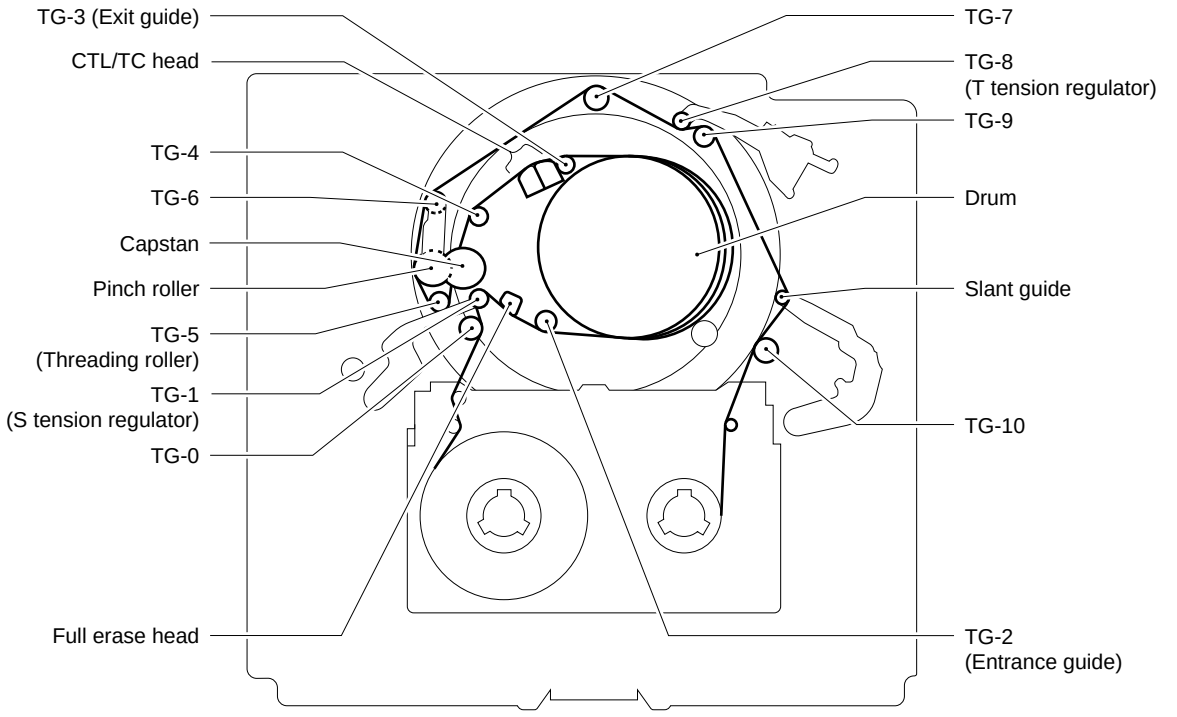
(4) Clean the following.
- Rotary heads (Refer to Section 2-1-2.)
- Tape running surface and lead portion of lower drum (Refer to Section 2-1-3.)
- Stationary heads (Refer to Section 2-1-4.)
- Tape running system and tape cleaner (Refer to Section 2-1-5.)

5-1-3. Connection (except measuring equipment)



PC : IBM PC/AT(*1) compatible machine

5-1-4. Parts Location of the Tape Running System

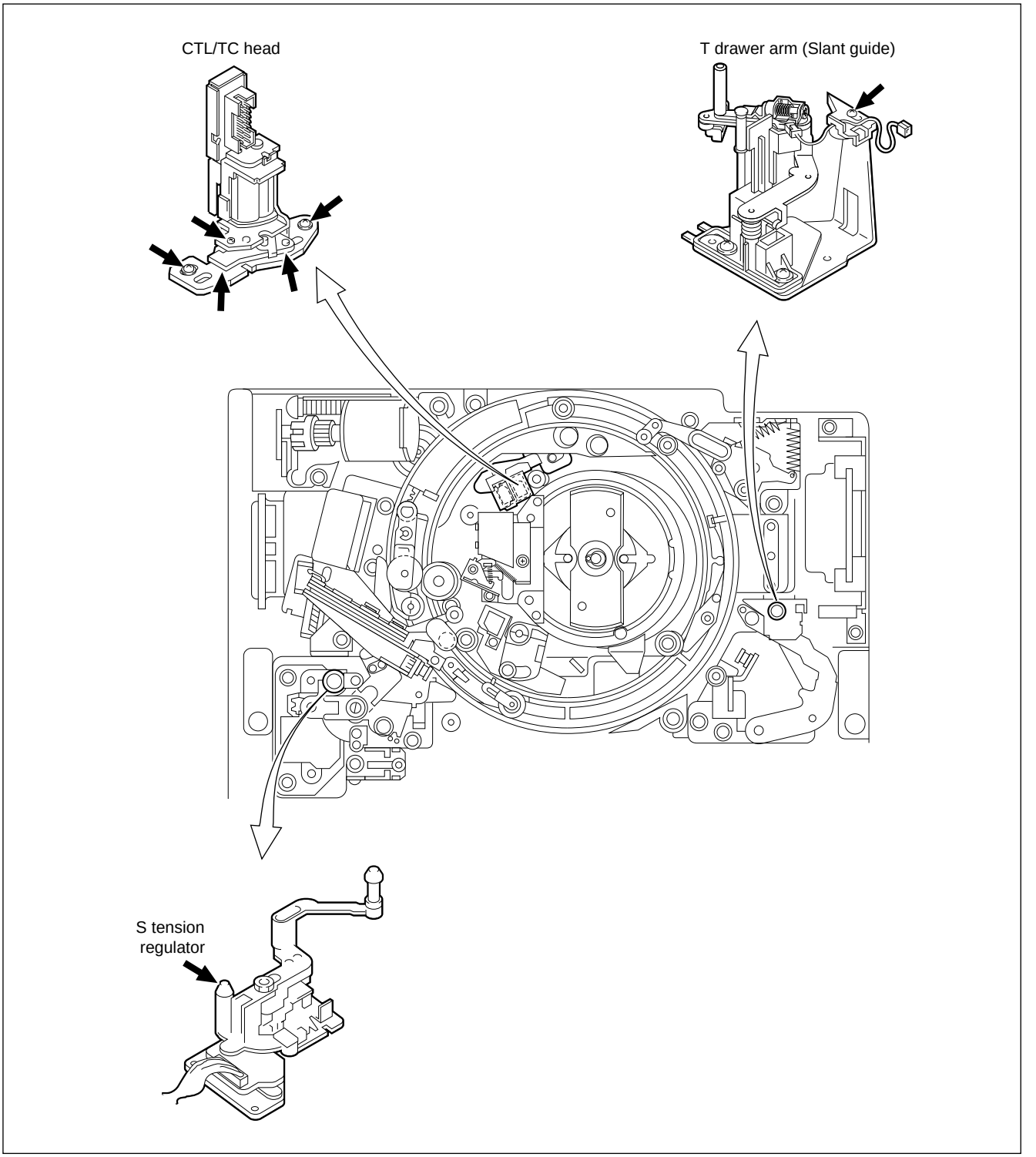


(*1) IBM PC/AT is a registered trademark of IBM corporation.

5-1-5. Locking Compound

When loosing the following screws, apply locking compound to the screws after adjustment is completed.
The locking compound that applied to other surrounding parts must be wiped off with gauze or soft cloth.

• Locking compound : 7-432-114-11



5-2. CTL/TC Head Zenith Adjustment

Note

The CTL/TC head zenith check and adjustment are not required except when the CTL/TC head is replaced.

Tools

- Flatness plate (SL-657): J-6086-570-A
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Check

1. Unthreading End Mode

Check that the unit is in the unthreading end mode.

2. Check the CTL/TC Head Zenith

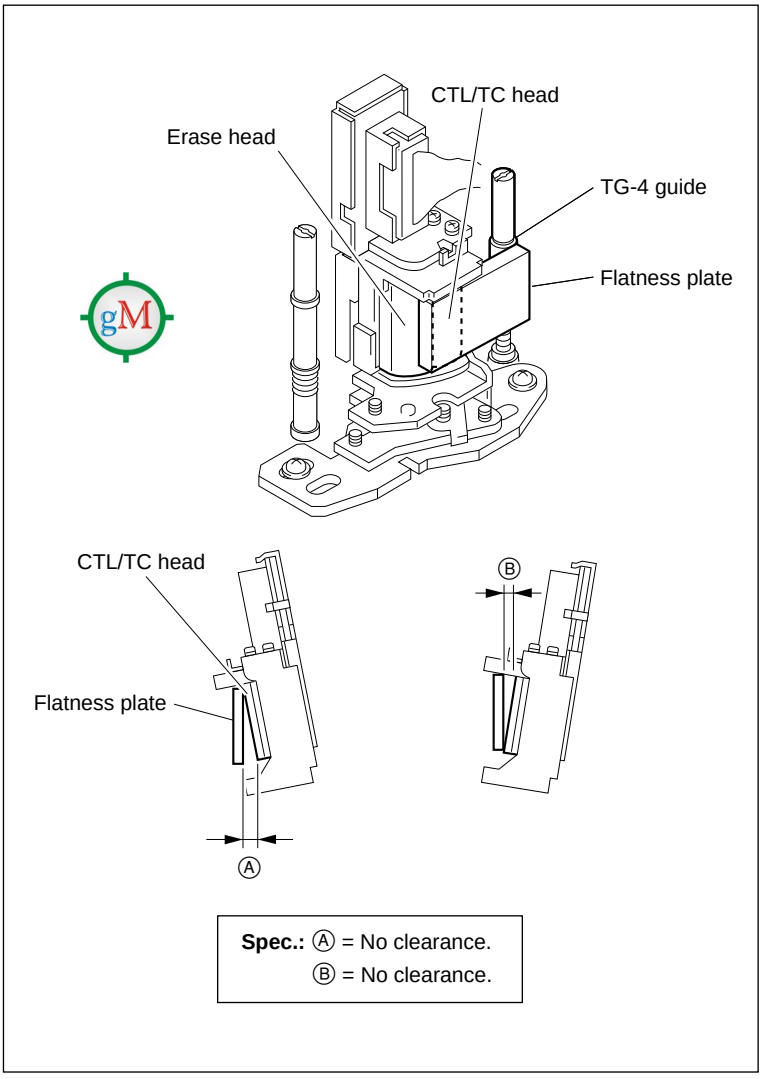
(1) Place the flatness plate lightly against the TG-4 guide and CTL/TC head.

CAUTION

Be careful not to damage the surface of the CTL/TC head and TG-4 guide.

(2) Check that no clearance exists between the CTL/TC head and flatness plate as TG-4 guide reference in step (1).

If the specification is not satisfied, perform steps 3 and later.
If it is satisfied, perform step 7.



CTL/TC Head Zenith Check

Adjustment

3. Remove the CL Guide Rail

Remove the two screws (B3 × 8), then remove the CL guide rail.

4. In Case of Clearance Exists at the Upper Part (Fig. 1)

Turn the zenith adjustment screw counterclockwise to satisfy the specification.

5. In Case of Clearance Exists at the Lower Part (Fig. 2)

Turn the zenith adjustment screw clockwise to satisfy the specification.

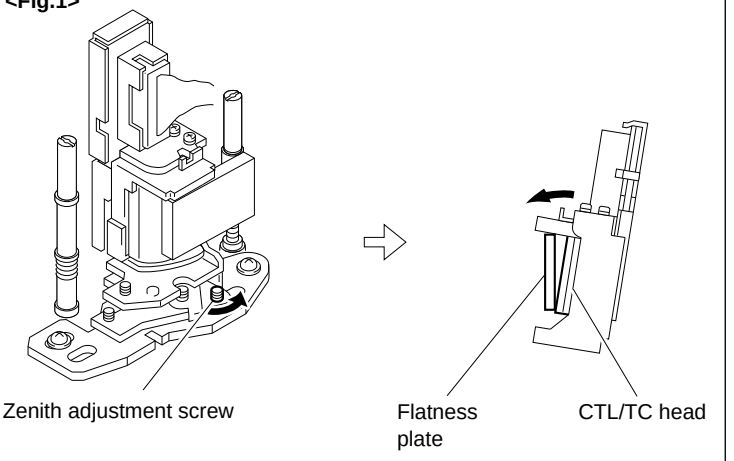
6. Install the CL Guide Rail

Install the CL guide rail with two screws.

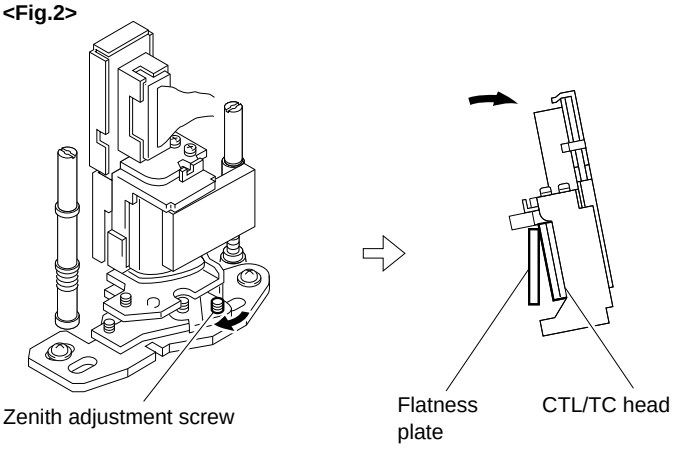
7. Cleaning

Clean the surface of the CTL/TC head, erase head and TG-4 guide with a cleaning cloth moistened with cleaning fluid.

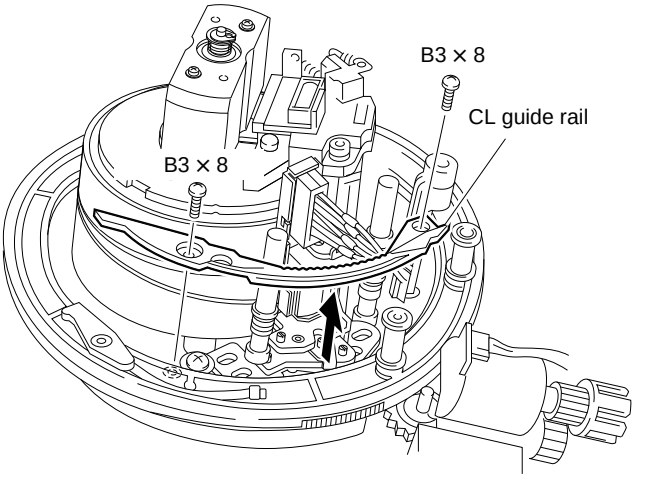
<Fig.1>



<Fig.2>



* **Removal/Installation of the CL guide rail**



CTL/TC Head Zenith Adjustment

5-3. Tape Running Adjustment

Drum entrance side

Equipment

PC (IBM PC/AT compatible machine)

* For the connection of a PC, refer to Section 5-1.

Tools

- DTF cassette tape (S cassette)
- Small round type mirror J-6080-029-A
- Tape guide adjustment screwdriver (MW-261): J-6322-610-A
- GY-2120 control software (remo.exe)

Confirmation

1. Set the S cassette tape.

(1) Place the reel shift plate assembly in the S cassette position.
(2) Set the S cassette tape and put a weight (about 1000 g) on the cassette so that it does not rise up.

2. Turn the Power On.

3. Check the tape running on the entrance side of the drum in the modes below.

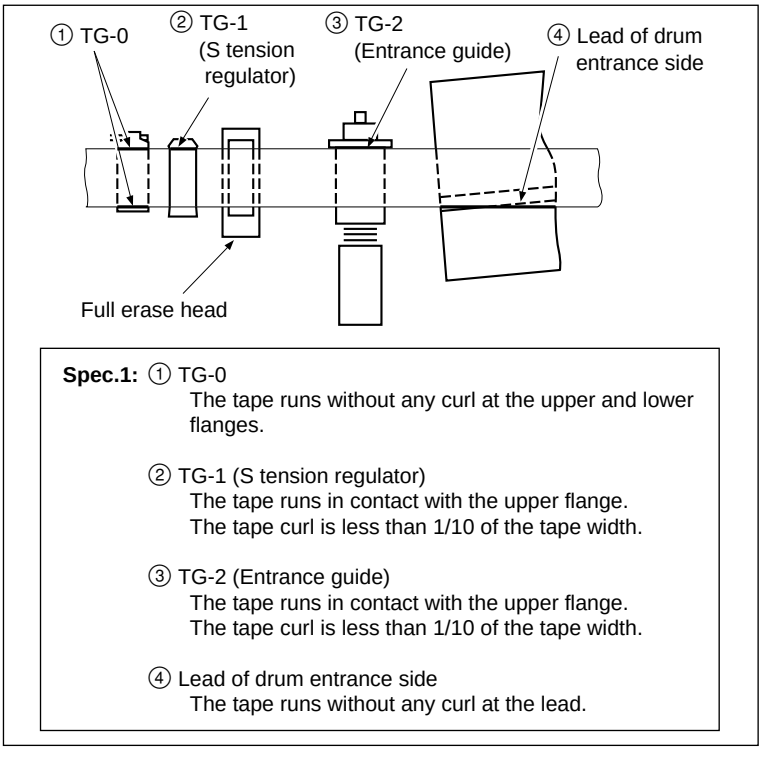
(a) FWD (PLAY) mode
Check that the tape running condition satisfies specification 1.
If specification 1 is not satisfied, perform steps 4 and 5.

(b) S-1 (VAR −1 times normal speed) mode
Check that the tape running condition satisfies specification 1.
If specification 1 is not satisfied, perform steps 4 and 5.

(c) S-5 (SHUTTLE −5 times normal speed) mode
Check that the tape running condition satisfies specification 1.
If specification 1 is not satisfied, perform steps 4 and 5.

(d) F FWD mode
Check that the tape running condition satisfies specification 1.
If specification 1 is not satisfied, perform steps 4 and 5.

(e) REW mode
Check that the tape running condition satisfies specification 1.
If specification 1 is not satisfied, perform steps 4 and 5.


① TG-0
② TG-1 (S tension regulator)
③ TG-2 (Entrance guide)
④ Lead of drum entrance side
Full erase head
Spec.1: ① TG-0
The tape runs without any curl at the upper and lower flanges.
② TG-1 (S tension regulator)
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.
③ TG-2 (Entrance guide)
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.
④ Lead of drum entrance side
The tape runs without any curl at the lead.

Tape Running Check at Drum Entrance Side

Adjustment

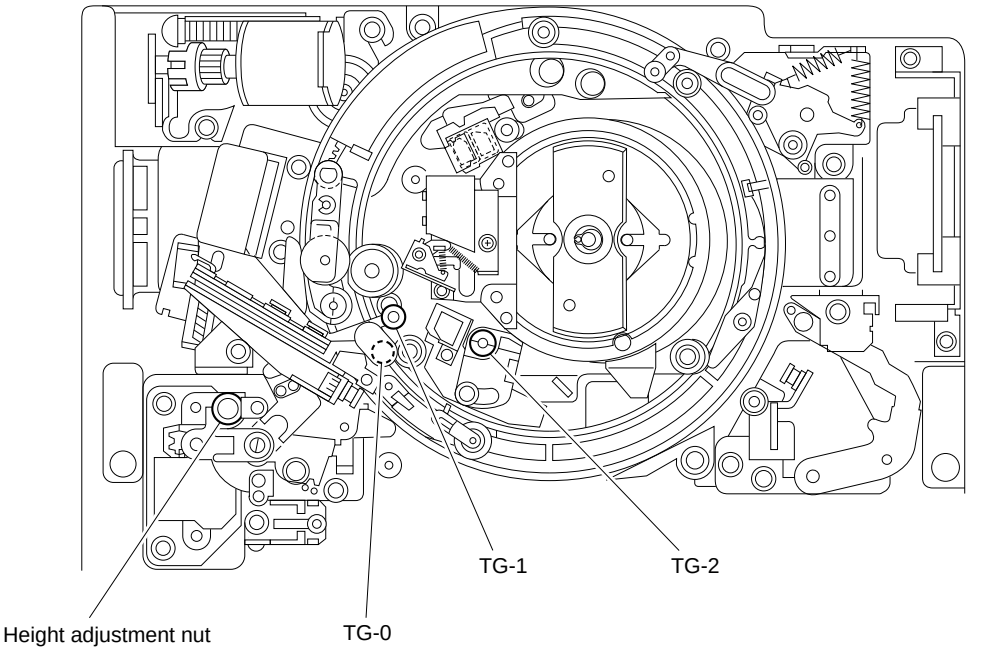
4. Adjust the TG-1 and TG-2 (Entrance Guide) Height

(1) Put the unit into the FWD mode.
(2) Turn the height adjustment nut of TG-1 and the upper flange of TG-2 using a tape guide adjustment driver and adjust the height of TG-1 and TG-2 so that the specification 1 is satisfied.

5. Recheck the Tape Running at Drum Entrance Side

Refer to step 3.

If the specification 1 is not satisfied, perform the adjustment in step 4 again.



Tape Running Adjustment at Drum Entrance Side

Drum Exit Side

Equipment

PC (IBM PC/AT compatible machine)

* For the connection of a PC, refer to Section 5-1.

Tools

- DTF cassette tape (S cassette)
- DTF cassette tape (L cassette)
- Small round type mirror J-6080-029-A
- Tape guide adjustment screwdriver (MW-261): J-6322-610-A
- GY-2120 control software (remo.exe)

Confirmation

1. Set the S cassette tape.

(1) Place the reel shift plate assembly to the S cassette position.
(2) Set the S cassette tape and put a weight (about 1000 g) on the cassette so that the cassette does not rise up.

2. Turn the Power On .

3. Check the tape running condition on the exit side of the drum in the modes below.

(a) FWD (PLAY) mode
Check that the tape running condition satisfies specification 2.

If specification 2 is not satisfied, perform steps 6 and 8.

(b) S-1 (VAR-1 time normal speed) mode
Check that the tape running condition satisfies specification 2.

If specification 2 is not satisfied, perform steps 7 and 8.

(c) S-5 (SHUTTLE-5 times normal speed) mode
Check that the tape running condition satisfies specification 2.

If specification 2 is not satisfied, perform steps 7 and 8.

(d) F FWD mode
Check that the tape running condition satisfies specification 2.

If specification 2 is not satisfied, perform steps 6 and 8.

(e) REW mode
Check that the tape running condition satisfies specification 2.

If specification 2 is not satisfied, perform steps 6 and 8.

4. Set the L cassette tape.

(1) Remove the S cassette tape.
(2) Turn the drive gear counterclockwise as far as it will go.
(3) Set the L cassette tape and put a weight (about 1000 g) on the cassette so that the cassette does not rise up.

5. Check the tape running condition at the T tape guide of a cassette.

(1) Play back the beginning portion of an L cassette tape.
(2) Check that the tape running condition satisfies specification 3 at the TG-10 guide and the T tape guide of an L cassette.

If specification 3 is not satisfied, perform step 9.

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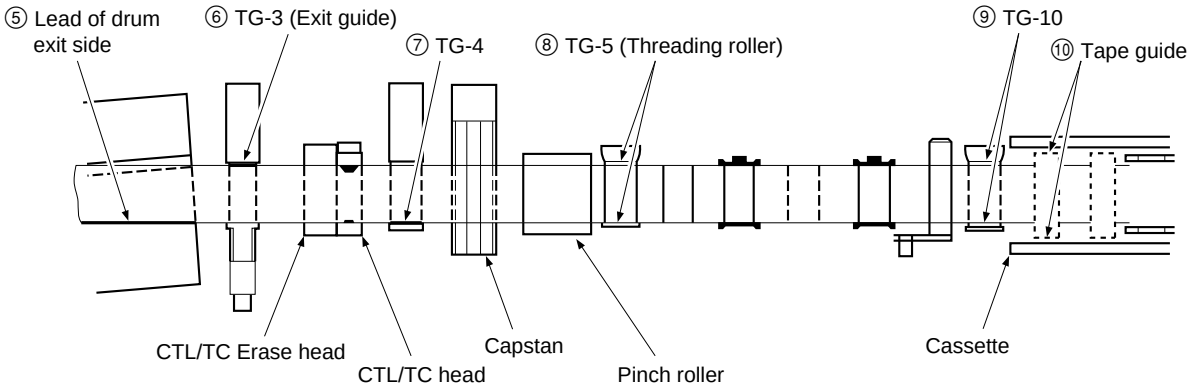


Spec.2: ⑤ Lead of drum exit side
The tape runs without any curl at the lead.

⑥ TG-3(Exit guide)
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.

⑦ TG-4
The tape runs in contact with the lower flange.
The tape curl is less than 1/10 of the tape width.

⑧ TG-5(Threading roller)
The tape runs without any curl at the upper and lower flanges.

Spec.3: FWD mode
⑨ TG-10
The tape runs not in contact with the upper and lower flanges.

⑩ Take-up side tape guide of cassette
The tape runs without any curl at the upper and lower portions of the tape guide.

Tape Running Check at Drum Exit Side

Adjustment

6. Adjust the TG-3 (Exit Guide) and TG-4 Height

(1) Set the S cassette tape and put the unit into the FWD mode.
(2) Turn the upper flanges of TG-3 and TG-4 using a tape guide adjustment driver and adjust the height of TG-3 and TG-4 so that the specification 2 is satisfied.

7. Adjust the TG-5 (Threading Roller) Height (only when the specification is not satisfied in S-1 mode and S-5 mode)

(1) Put the unit into the EJECT mode.
(2) Take out the cassette tape.
(3) Turn the upper flange of TG-5 using the tape guide adjustment driver and adjust the height of TG-5 so that the specification 2 is satisfied.
(4) Set the S cassette tape and put the unit into the S-1 mode or S-5 mode. At this time, check that the tape running condition satisfies specification 2.

If it is not satisfied, repeat steps (1) through (4) mentioned above.

8. Recheck the Tape Running at Drum Exit Side

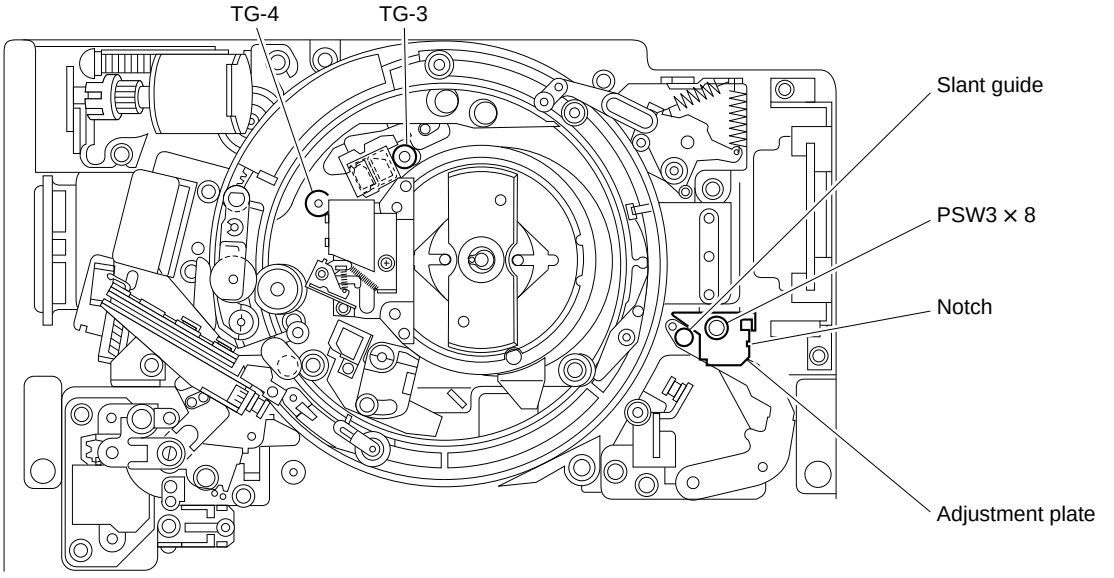
Refer to steps 3 through 7.
If the specification 2 is not satisfied, perform the adjustment in step 6 again.
(If the specification 2 is not satisfied in S-1 mode and S-5 mode , perform the adjustment in step 7 again.)

9. Adjust the Slant Guide Slantness

(1) Loosen the fixing screw of the adjustment plate by 1/4 to 1/2 turn.
(2) Insert a 3 mm flatblade screwdriver into the notch of the adjustment plate.
(3) Adjust the slantness of the slant guide so that specification 3 is satisfied.
(4) Tighten the screw loosened in step (1).
(5) Recheck that specification 3 is satisfied referring to steps 4 and 5.

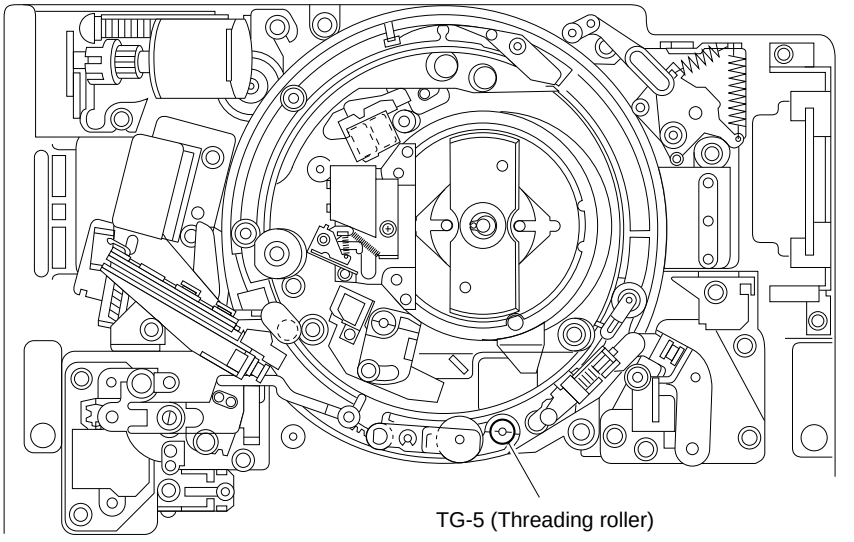
If it is not satisfied, repeat steps (1) through (5) mentioned above.

* **TG-3 and TG-4 height adjustment/slant guide slantness adjustment**



* **TG-5 height adjustment**
(only when the specification is not satisfied in S-1 mode and S-5 mode)

<Unthreading end mode>



Tape Running Adjustment at Drum Exit Side

5-4. Tracking Adjustment

Equipment

- Oscilloscope
- PC (IBM PC/AT compatible machine)

* For connection of a PC, refer to Section 5-1.

Tools

- Alignment tape YR2-1: 8-960-074-11
- Small round type mirror J-6080-029-A
- Tape guide adjustment driver (MW-261): J-6322-610-A
- GY-2120 control software (remo.exe)

Preparation

1. Turn the Power Off

2. Connect the Oscilloscope

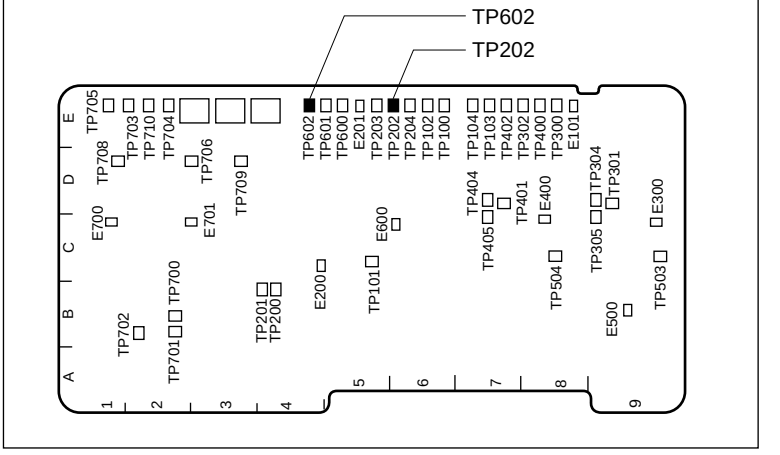
CH-1: TP202/EQ-66 board (REC AC ENV signal)
TRIG: TP602/EQ-66 board (1/2 VD signal)

3. Set the Alignment Tape

Set the YR2-1 and put a weight (about 1000 g) on the cassette so that it does not rise up.

* Connection of the oscilloscope
  CH-1 : TP202/EQ-66 board (REC AC ENV signal)
  TRIG : TP602/EQ-66 board (1/2 VD signal)

<EQ-66 board, side A>



Preparation

Confirmation

4. Turn the Power On.

5. Check the tape running condition at the entrance and exit sides of the drum in the modes below.

(a) FWD mode

(1) Activate the remo.exe software and play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)

(2) Press the [F8] key of a PC to enter the tracking adjustment mode. (Refer to Section 1-10-5.)

(3) Check that the both output level on the entrance and exit sides does not become higher than the output level in the center portion when the tracking volume control is operated from the PC.

If the output level on the entrance or exit sides becomes higher than the output level in the center portion, perform the adjustment (on the drum entrance or exit side) in steps 7 and later.

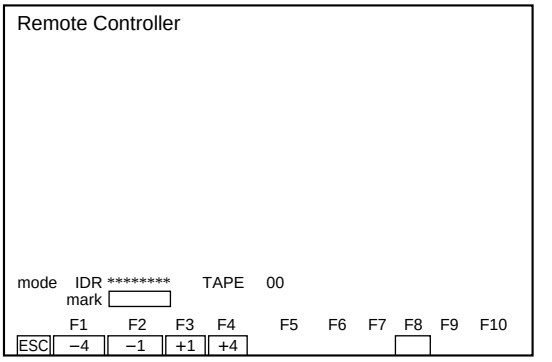
(4) Operate the tracking volume control in the + direction from the PC so that the center portion of an RF envelope waveform makes 80% of the maximum output level. At that time, confirm that the RF envelope waveform satisfies specification 1.

If the output level fluctuates, read the average value. In this case, operate the tracking volume control from the PC and set the output level in the center portion of an RF envelope waveform to the maximum value. At that time, confirm that the fluctuation value satisfies specification 2.

If specifications 1 and 2 are not satisfied, perform the adjustment (on the drum entrance or exit side) in steps 7 and later.

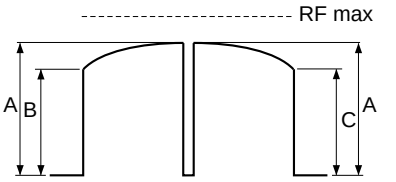
(5) Press the [F8] key of the PC to terminate the tracking adjustment mode.

<Tracking adjustment mode display>



・Alignment tape: YR2-1 (IDR : 0 to 72000)

<Head-to-tape contact>



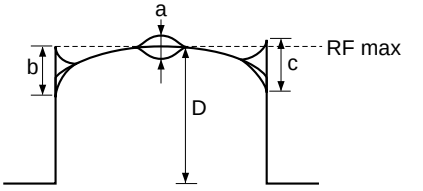
A = RF max × 0.8

Spec.1: $\frac{B}{A} \times 100 \geqq 80\%$

$\frac{C}{A} \times 100 \geqq 80\%$

(Output levels (B and C) at the drum entrance side and exit side are more than 80% of the center level(A).)

<Fluctuation>



D = average level in the center portion

Spec.2: $\frac{a}{D} \times 100 \leqq 20\%$

$\frac{b}{D} \times 100 \leqq 20\%$

$\frac{c}{D} \times 100 \leqq 20\%$

(Fluctuation amounts (a, b, c) at the drum center portion, entrance side and exit side are less than 20% of the average level (D).)

- To be continued. -

(b) FWD mode → S-1 mode

(1) Play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)

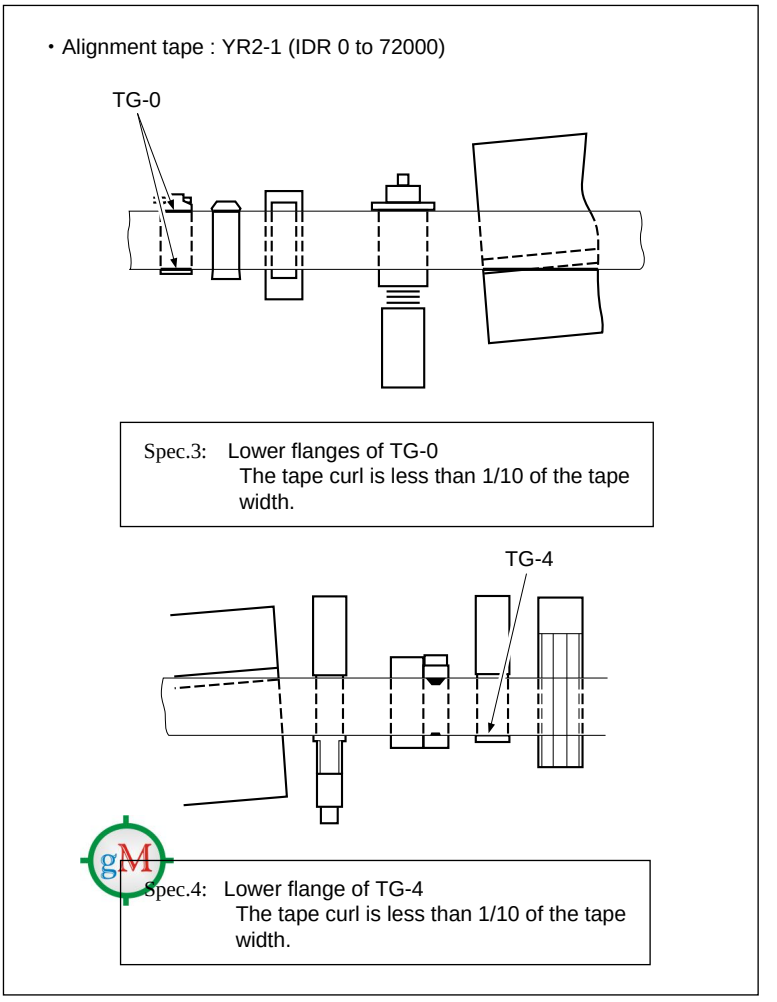
(2) Put the unit into the FWD mode, once. Five or seven seconds later, put into the S-1 mode.

Check that the tape curl at the lower flange of TG-0 is less than 1/10 of the tape width. (Spec.3)

If the specification 3 is not satisfied, adjust the height of TG-1 and TG-2.

Check that the tape curl at the lower flange of TG-4 is less than 1/10 of the tape width. (Spec.4)

If the specification 4 is not satisfied, adjust the height of TG-5.


• Alignment tape : YR2-1 (IDR 0 to 72000)
TG-0
Spec.3: Lower flanges of TG-0
The tape curl is less than 1/10 of the tape width.
TG-4
Spec.4: Lower flange of TG-4
The tape curl is less than 1/10 of the tape width.

Tracking Check (S-1 → FWD)

(c). S-1 Mode to FWD Mode

(1) Play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)

(2) Put the unit into the S-1 mode once. Five or seven seconds later, put the unit into FWD mode.
At this time, check the following three items (① to ③).

① Check that the RF envelope waveform turns to the maximum level with the even level within 1 second. (Spec.5-1)

In case of the waveform become A, B or C, check that the output level (b) is more than 70% of the level in normal FWD mode (a) and returns it to the level in normal FWD mode within 1 second. (Spec.5-2)

If specification 5-2 is not satisfied in waveform A or B shown in the figure, check the tape running at the drum entrance side. (Refer to Section 5-3.)
If specification 5-2 is not satisfied in waveform C shown in the figure, check the tape running at the drum exit side. (Refer to Section 5-3.)

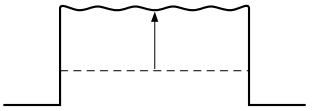
② Check that the tape curl at the lower flanges of TG-0 is less than 1/10 of the tape width. (Spec.6)

If the specification 6 is not satisfied, adjust the height of TG-1 and TG-2.

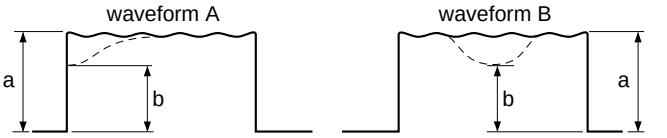
③ Check that the tape curl at the lower flange of TG-4 is less than 1/10 of the tape width. (Spec.7)

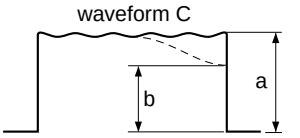
If the specification 7 is not satisfied, adjust the height of TG-5.

• Alignment tape: YR2-1 (IDR : 0 to 72000)



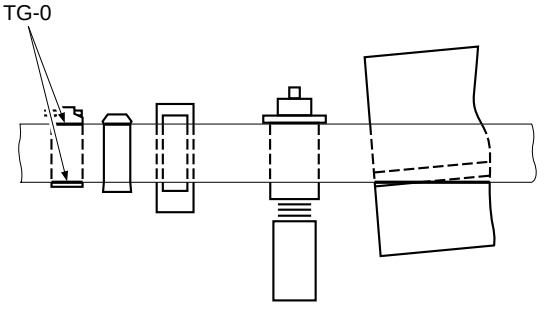
Spec.5-1: The RF envelope waveform turns to the maximum level with the even level within 1 second.



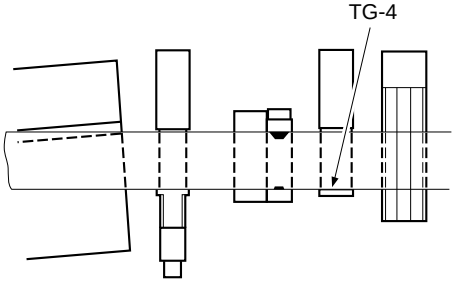


Spec.5-2: $\frac{b}{a} \times 100 \geqq 70\%$

(The output level (b) is more than 70% of the level in normal FWD mode (a) and returns it to the level in normal FWD mode within 1 second.)



Spec.6: Lower flanges of TG-0
The tape curl is less than 1/10 of the tape width.



Spec.7: Lower flange of TG-4
The tape curl is less than 1/10 of the tape width.

Tracking Check (S-1 → FWD)

6. Check the PB Head Head-to-tape Contact

(1) Connect the oscilloscope.
CH-1: TP302/EQ-66 board
(PB AC ENV signal)
CH-2: TP402/EQ-66 board
(PB BD ENV signal)
TRIG: TP602/EQ-66 board
(1/2 VD signal)

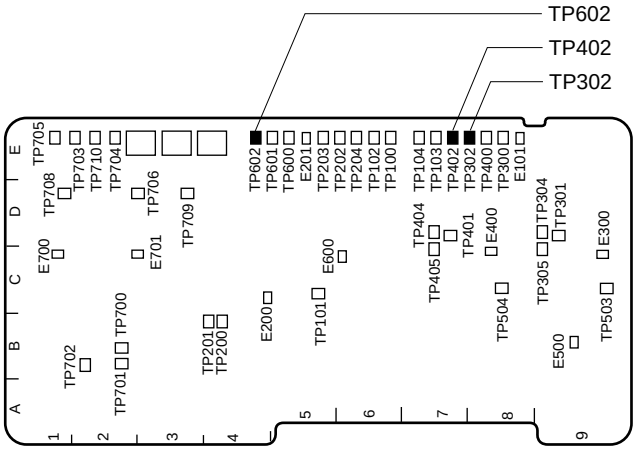
(2) Play back the YR2-1 alignment tape (IDR: 72000 to 90000). (FWD mode)

(3) Check that the RF envelope waveform output at all channels.

* Connection of the oscilloscope

CH-1 : TP302/EQ-66 board (PB AC ENV signal)
CH-2 : TP402/EQ-66 board (PB BD ENV signal)
TRIG : TP602/EQ-66 board (1/2 VD signal)

<EQ-66 board, side A>



* Alignment tape: YR2-1 (IRD : 72000 to 90000)

Spec.8: The RF envelope waveform output at all channels .

PB Head Head -to-tape Contact Check

Adjustment

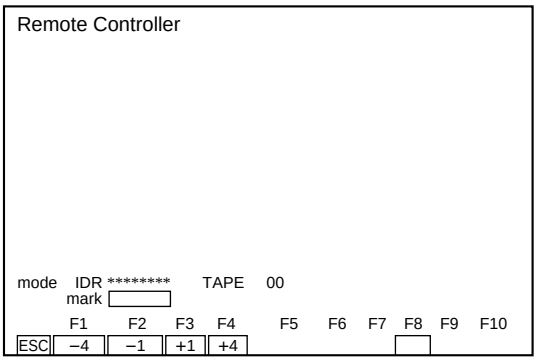
Drum Entrance Side

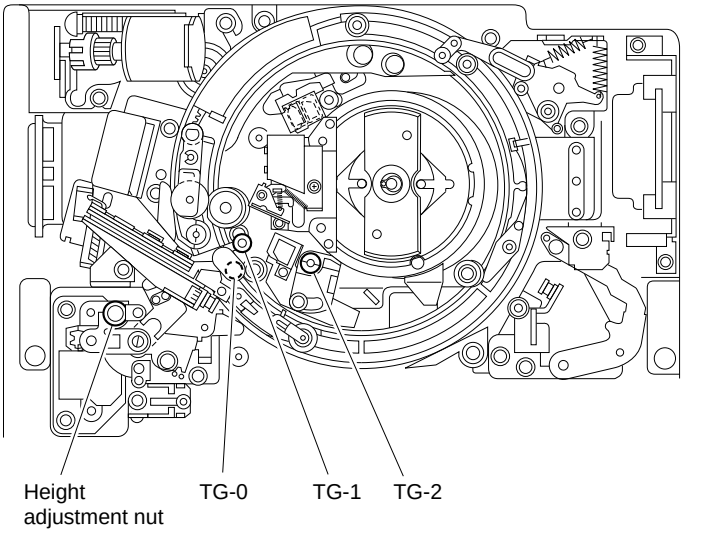
7. Adjust the Tracking at Drum Entrance Side

(1) Play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)
(2) Press the [F8] key of a PC to enter the tracking adjustment mode.
(Refer to Section 1-10-5.)
(3) Operate the tracking volume control in the + direction from the PC so that the center portion of the RF envelope waveform makes 80% of the maximum output level.
(4) Loosen the upper flange of TG-2 so that the tape does not come in contact with it.
(5) Turn the height adjustment nut of TG-1 so that the RF envelope waveform is as shown in Fig.1.
(6) Turn the upper flange of TG-2 and adjust the height of TG-2 so that the RF envelope waveform is flat. (Fig.2)

- To be continued. -

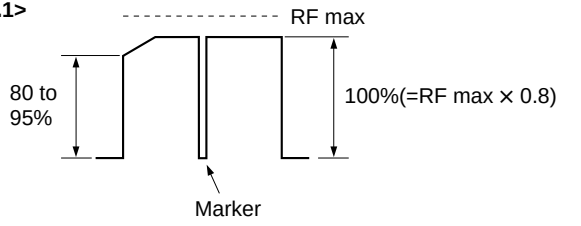
<Tracking adjustment mode display>





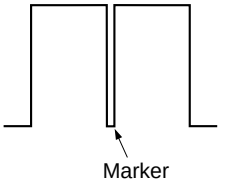
• Alignment tape: YR2-1 (IDR : 0 to 72000)

<Fig.1>



If the pressure against the tape at TG-1 and 2 are too much, the waveform becomes as shown in the right figure. (NG)

<Fig.2>



If the waveform is not flat, perform the check and adjustment below.

① Clean the drum lead with a bamboo stick. (Refer to Section 2-1-4.)

② Press down the tape by bamboo stick very lightly and check that the tape is running without aparting from the drum lead.

③ Adjust the height of TG-2 so that the RF envelope waveform is nearly flat within the range of the specification shown in the Fig 3. At this time, do not overpress the tape at TG-2.

(7) Check the tape running at the drum entrance side in the following modes.
- FWD mode
- S-1 mode
- S-5 mode
- F FWD mode
- REW mode

If the tape curl does not satisfy the specification at either TG-0, TG-1 or TG-2, perform the following adjustments while observing the waveform.

① Change the pressure against the tape at TG-1 and TG-2 within the range shown in the Fig. 1.
- If the tape curl at TG-1 exceeds the specification turn the upper flange of TG-2 clockwise.
- If the tape curl at TG-2 exceeds the specification turn the height adjustment nut of TG-1 clockwise.

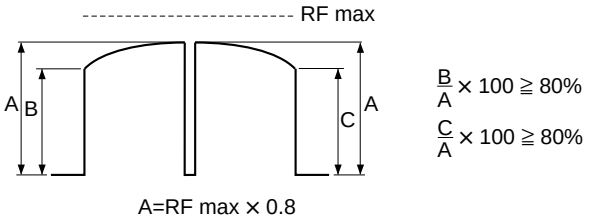
② Perform the tracking adjustment again. (Refer to step (1) through (7) mentioned above.)

(8) Press the [8] key of the PC to exit the tracking adjustment mode.

8. Recheck the Tracking

Refer to steps 5 through 6.

<Fig.3>



<Tape running check>

Spec.1: ① TG-0
The tape runs without any curl at the lower flange.

② TG-1 (S tension regulator)
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.

③ TG-2(Entrance guide)
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.

④ Lead of drum entrance side
The tape runs without any curl at the lead.

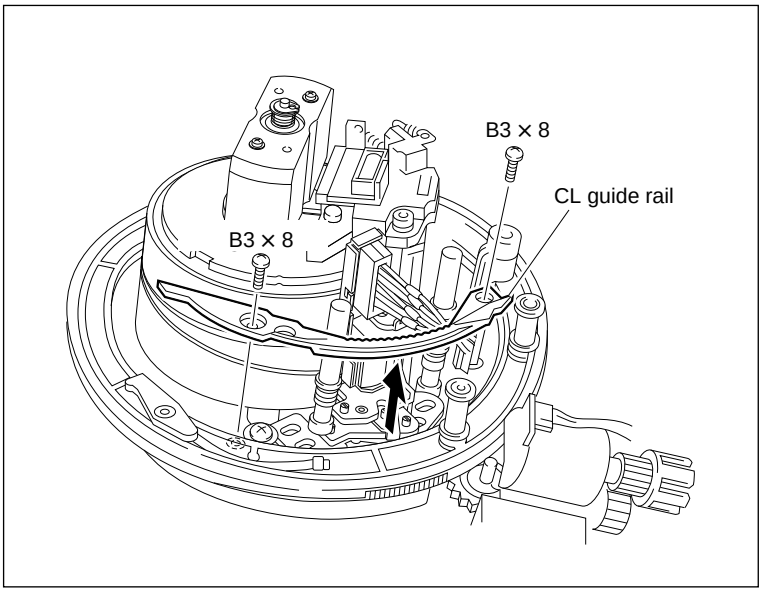
Tracking Adjustment at Drum Entrance Side

http://getMANUAL.com

Drum Exit Side

9. Remove the CL Guide Rail

Remove the two screws, then remove the CL guide rail.

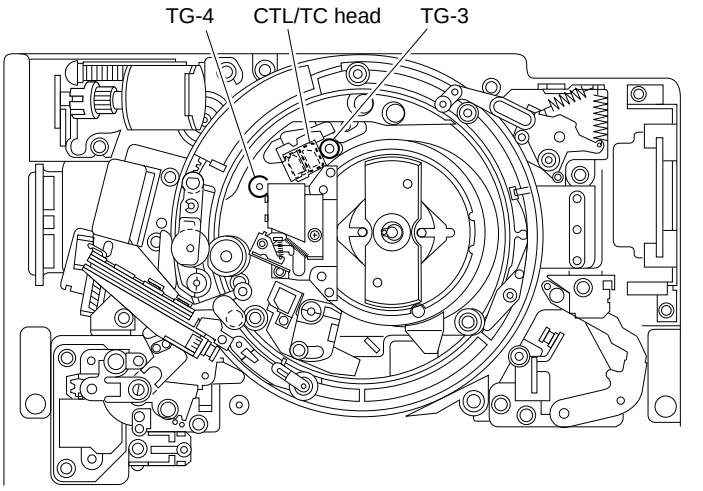


Removal/Installation of the CL Guide Rail

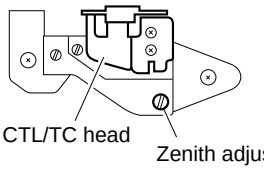
10. Adjust the Tracking at Drum Exit Side

(1) Play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)
(2) Press [F8] key of the PC to enter the tracking adjustment mode.
(Refer to Section 1-10-5.)
(3) Operate the tracking volume control in the **+** direction from the PC so that the center portion of the RF envelope waveform makes 80% of the maximum output level.
(4) Turn the upper flange of TG-3 counterclockwise by one to two turns so that the tape does not come in contact with the upper flange of TG-3.
(5) Turn the upper flange of TG-4 clockwise so that the tape does not come in contact with the lower flange of TG-4.
(6) Turn the zenith adjustment screw of the CTL/TC head so that the right position of the RF envelope waveform makes 20% or less of the maximum output level (Fig. 1).
At this time, check that the tape does not in contact with the upper flange of TG-3.
(7) Turn the upper flange of TG-3 so that the RF envelope waveform becomes flat. (Fig. 2)
At that time, the tape does not in contact with the lower flange of TG-4.

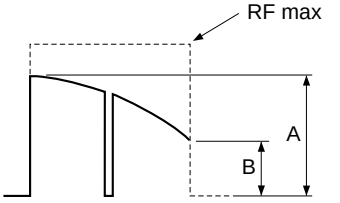
- To be continued. -



・Alignment tape: YR2-1 (IDR : 0 to 72000)

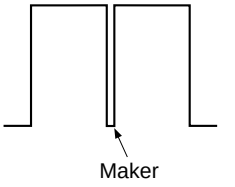


<Fig. 1>

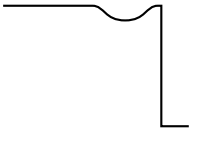


$$0 \leqq \frac{B}{A} \leqq 0.2$$

<Fig. 2>



If the pressure against the tape at TG-3 is too much, the waveform becomes as shown in the right figure. (In this case, it is NG)



If the waveform is not flat, perform the check and adjustment below.

① Clean the drum lead with a bamboo stick. (Refer to Section 2-1-4.)
② Press down the tape by bamboo stick very lightly and check that the tape is running without aparting from the drum lead.
③ Adjust the height of TG-3 so that the RF envelope waveform is nearly flat within the range of the specification shown in the Fig.3. At this time, do not overpress the tape at TG-3.

(8) Adjust the height of TG-4 so that the lower flange of TG-4 comes in contact with the tape.
(9) Check the tape running at the drum exit side in the following modes.
- FWD mode
- S-1 mode
- S-5 mode
- F FWD mode
- REW mode

If the tape curl does not satisfy the specification at TG-3, perform the following adjustments while observing the waveform.

① Change the zenith of the CTL/TC head within the range shown in Fig. 1.
② Perform the tracking adjustment again. (Refer to steps (1) through (9) mentioned above.)

(10) Press [8] key of the PC to exit the tracking adjustment mode.

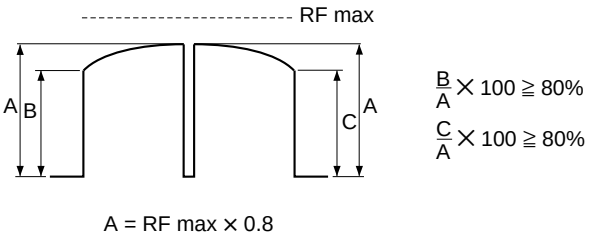
11. Recheck the Tracking

Refer to step 5.

12. Install the CL Guide Rail

Install the CL guide rail with two screws.

<Fig.3>



$\frac{B}{A} \times 100 \geqq 80\%$

$\frac{C}{A} \times 100 \geqq 80\%$

A = RF max × 0.8

<Tape running check>

Spec.2: ⑤ Lead of drum exit side
The tape runs without any curl at the lead.

⑥ TG-3 (Exit guide)
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.

⑦ TG-4
The tape runs in contact with the lower flange.
The tape curl is less than 1/10 of the tape width.

⑧ TG-5 (Threading roller)
The tape runs without any curl at the upper and lower fianges.

Tracking Adjustment at Drum Exit Side

5-5. CTL/TC Head Height Adjustment

Note

The CTL/TC head height adjustment is closely related to the azimuth adjustment and head position adjustment.
Be sure to perform adjustments (or checks) according to “In case the adjustment is performed” in this section when the CTL/TC head height is adjusted.

Equipment

- Oscilloscope
- PC (IBM PC/AT compatible machine)

* For connection of a PC, refer to Section 5-1.

Tools

- Alignment tape YR2-1: 8-960-074-11
- GY-2120 control software (remo.exe)

Preparation

1. Turn the Power Off

2. Connect the Oscilloscope

CH-1: TP704/EQ-66 board (CTL ANA signal)
TRIG: TP602/EQ-66 board (1/2 VD signal)

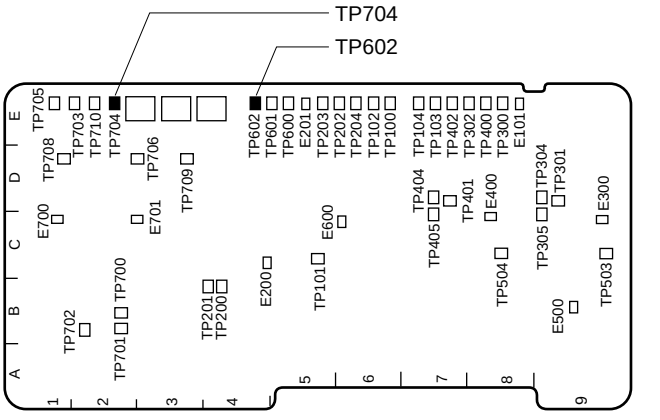
3. Set the Alignment Tape

Set the YR2-1 and put a weight (about 1000 g) on the cassette so that it does not rise up.

* Connection of the oscilloscope

CH-1 : TP704/EQ-66 board (CTL ANA signal)
TRIG : TP602/EQ-66 board (1/2 VD signal)

<EQ-66 board, side A>



Preparation

Check

4. Turn the Power On

5. Play Back the Alignment Tape

Play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)

6. Check the CTL/TC Head Height

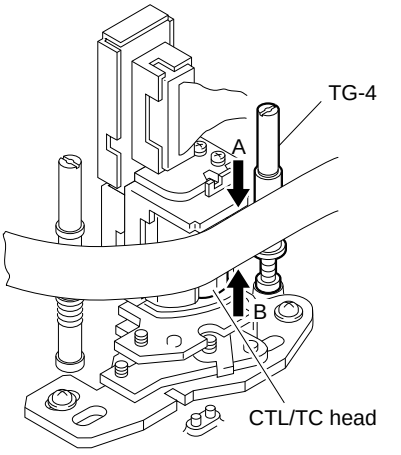
(1) Check that the level decreases when portion A of the tape shown in the figure is pressed down.

If the level increases, perform step 7.

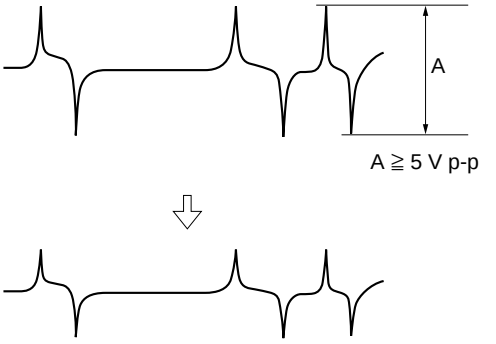
(2) Check that the level decreases when portion B of the tape is pushed up.

If the level increases, perform step 7.

* Alignment tape: YR2-1



<CTL Output waveform>



Spec. : The level decreases when pressing down and pushing up the alignment tape.

CTL/TC Head Height Check

Adjustment

7. In Case the Level Increases when the Tape is Pressed Down (Fig. 1)

Turn the height adjustment screw clockwise and adjust so that the output waveform is maximum.

8. In Case the Level Increases when the Tape is Pushed Up (Fig. 2)

Turn the height adjustment screw counterclockwise and adjust so that the output waveform is maximum.

In case the adjustment is performed

9. Adjust the CTL/TC Head Azimuth

Refer to Section 5-6.

10. Adjust the CTL/TC Head Position

Refer to Section 5-7.

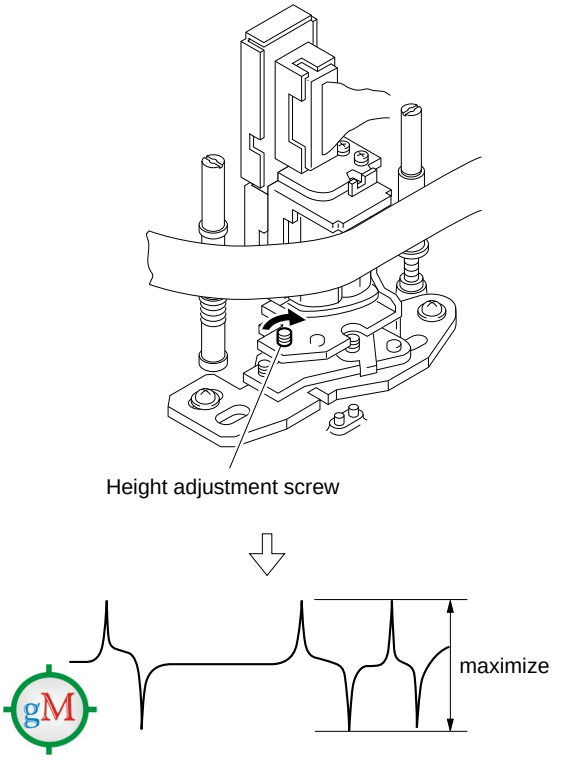
11. Check the CTL/TC Head Height

Refer to steps 6 and 7 in this section.

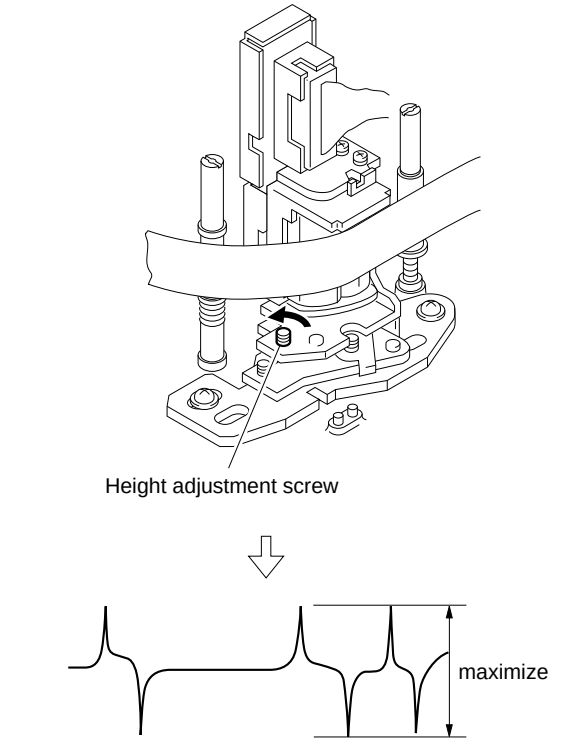
12. Check the CTL/TC Head Azimuth

Refer to Section 5-6.

<Fig. 1>



<Fig. 2>



CTL/TC Head Height Adjustment

5-6. CTL/TC Head Azimuth Adjustment

Note

The CTL/TC head azimuth adjustment is closely related to the head position adjustment and head height adjustment.
Be sure to perform adjustments (or checks) according to “In case the adjustment is performed” in this section when the CTL/TC head azimuth is adjusted.

Equipment

- Oscilloscope
- PC (IBM PC/AT compatible machine)

* For connection of a PC, refer to Section 5-1.

Tools

- Alignment tape YR2-1: 8-960-074-11
- GY-2120 control software (remo.exe)

Preparation

1. Turn the Power Off

2. Connect the Oscilloscope

CH-1: TP710/EQ-66 board (CTL PLS signal)
CH-2: TP705/EQ-66board (RSYC signal)

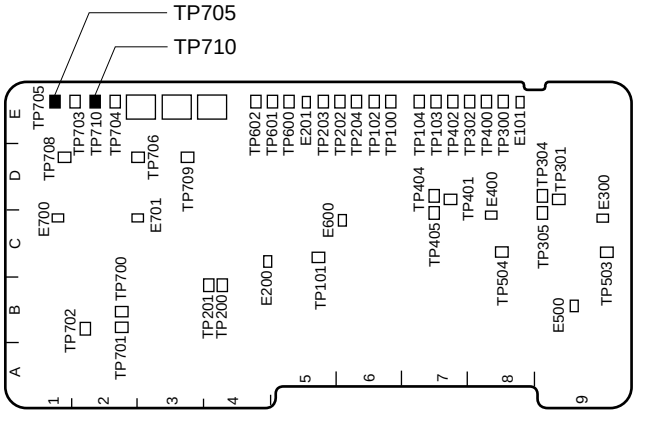
3. Set the Alignment Tape

Set the YR2-1 and put a weight (about 1000 g) on the cassette so that it does not rise up.

* Connection of the oscilloscope

CH-1 : TP710/EQ-66 board (CTL PLS signal)
CH-2 : TP705/EQ-66 board (RSYC signal)

<EQ-66 board, side A>



Preparation

Check

4. Turn the Power On

5. Play Back the Alignment Tape

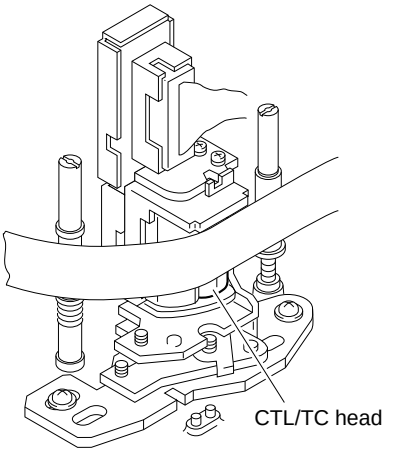
Play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)

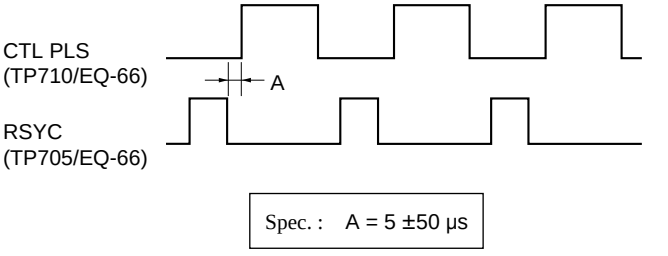
6. Check the CTL/TC Head Azimuth

Check that the positional relationship between the rising edge of CTL signal and falling edge of RSYC signal satisfies the specification.

If the specification is not satisfied, perform steps 7 and later.

* Alignment tape: YR2-1 (IDR 0 to 72000)





Spec. : A = 5 ±50 µs

CTL/TC Head Azimuth Check

Adjustment

7. Adjust the CTL/TC Head Azimuth

(1) Turn the azimuth adjustment screw clockwise so that the specification is satisfied.

(2) Strike the portions A and B shown in the figure lightly with the tip of a screwdriver. Then check that the specification is satisfied.

In case the adjustment is performed

8. Adjust the CTL/TC Head Position

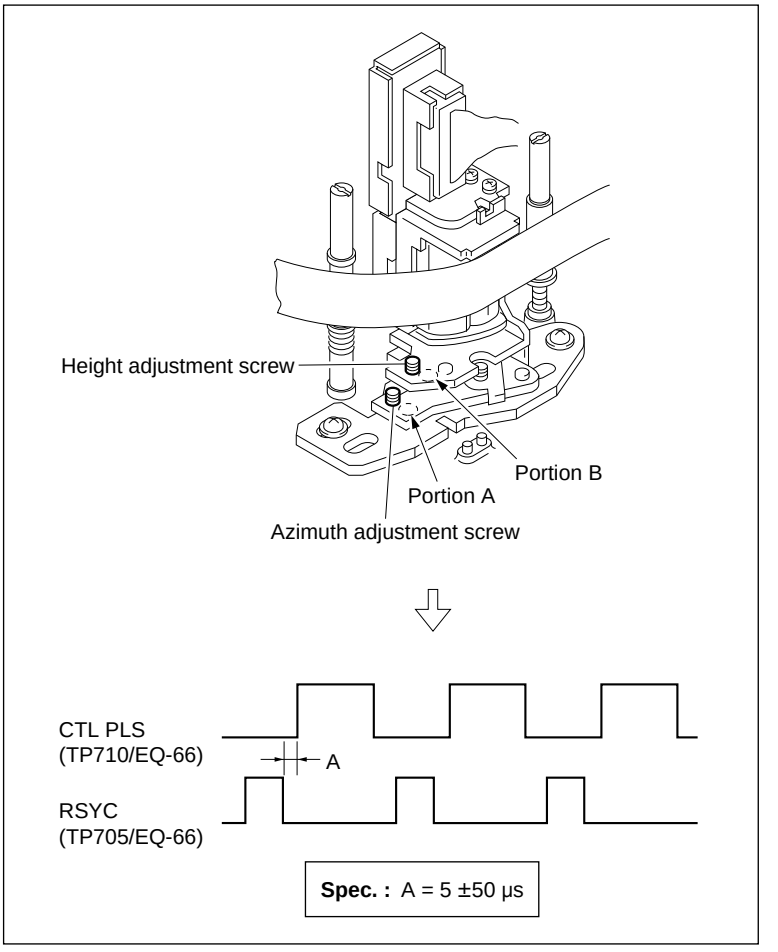
Refer to Section 5-7.

9. Check the CTL/TC Head Height

Refer to Section 5-5.

10. Check the CTL/TC Head Azimuth

Refer to steps 6 and 7 in this section.



CTL/TC Head Azimuth Adjustment

5-7. CTL/TC Head Position Adjustment

Note

The CTL/TC head position adjustment is closely related to the head height adjustment and the head azimuth adjustment.
Be sure to perform adjustments (or checks) according to “In case the adjustment is performed” in this section when the CTL/TC head position is adjusted.

Equipment

- Oscilloscope
- PC (IBM PC/AT compatible machine)

* For connection of a PC, refer to Section 5-1.

Tools

- Alignment tape YR2-1: 8-960-074-11
- GY-2120 control software (remo.exe)

Preparation

1. Turn the Power Off

2. Connect the Oscilloscope

CH-1: TP202/EQ-66 board
(REC AC ENV signal)
CH-2: TP602/EQ-66 board (1/2 VD signal)
CH-3: TP100/EQ-66 board (REC AC SEL signal)
TRIG: TP602/EQ-66 board (1/2 VD signal)

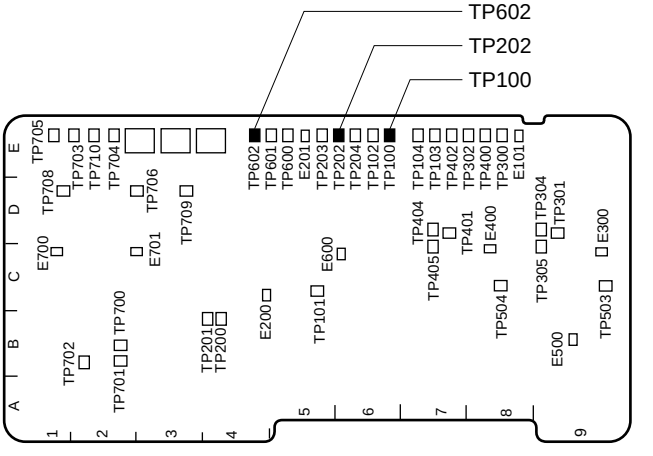
3. Set the Alignment Tape

Set the YR2-1 and put a weight (about 1000 g) on the cassette so that it does not rise up.

* Connection of the oscilloscope

CH-1 : TP202/EQ-66 board (REC AC ENV signal)
CH-2 : TP602/EQ-66 board (1/2 VD signal)
CH-3 : TP100/IEQ-66 board (REC AC SEL signal)
TRIG : TP602/EQ-66 board (1/2 VD signal)

<EQ-66 board, side A>



Preparation

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Check

4. Turn the Power On

5. Play Back the Alignment Tape

Play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)

6. Check the CTL/TC Head Position

(1) Press [F8] key of the PC to enter the tracking adjustment mode.
(Refer to Section 1-10-5.)

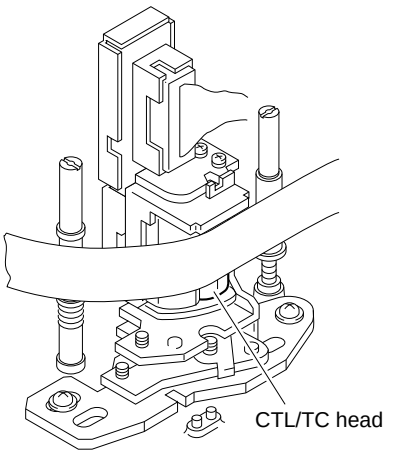
(2) Operate the tracking volume control from the PC so that the output level in the center portion of the RF envelope waveform is maximum.
At that time, check that the marker is located in the rising portion of 1/2 VD signal.

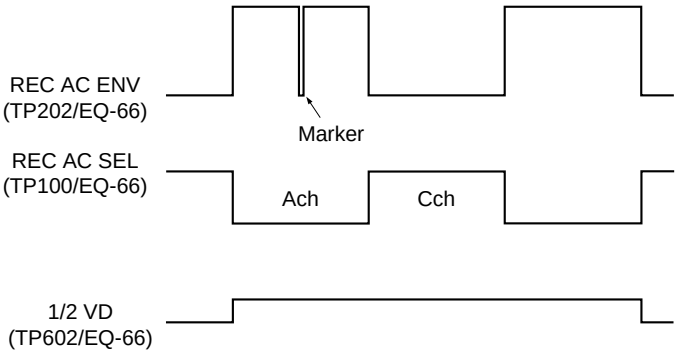
(3) Press [F8] key of the PC to exit the tracking adjustment mode and fix the tracking control volume.

(4) Check that the output level in the center portion of the RF envelope waveform satisfies the specification.

If the specification is not satisfied, perform steps 7 and later.

* Alignment tape: YR2-1 (IDR : 0 to 72000)





Spec. : When the tracking control volume is fixed, the output level in the center portion of the RF envelope waveform is maximum.

CTL/TC Head Position Check

Adjustment

7. Remove the CL Guide Rail
Remove the two screws, then remove the CL guide rail.

8. Loosen the Screws
Loosen the two fixing screws (PSW3 × 8) of the CTL/TC head assembly by 1/4 to 1/2 turn.

9. Adjust the CTL/TC Head Position
(1) Activate the remo. exe software, and press [F8] key of the PC to enter the tracking adjustment mode. (Refer to Section 1-10-5.)
(2) Insert a 3 mm flatbladed screwdriver into the notch of the CTL/TC head assembly.
(3) Adjust the CTL/TC head assembly position so that the specification is satisfied.

10. Tighten the Screws
Tighten the two screws loosened in step 8.

11. Recheck the CTL/TC Head Position
Refer to steps 5 and 6 in this section.

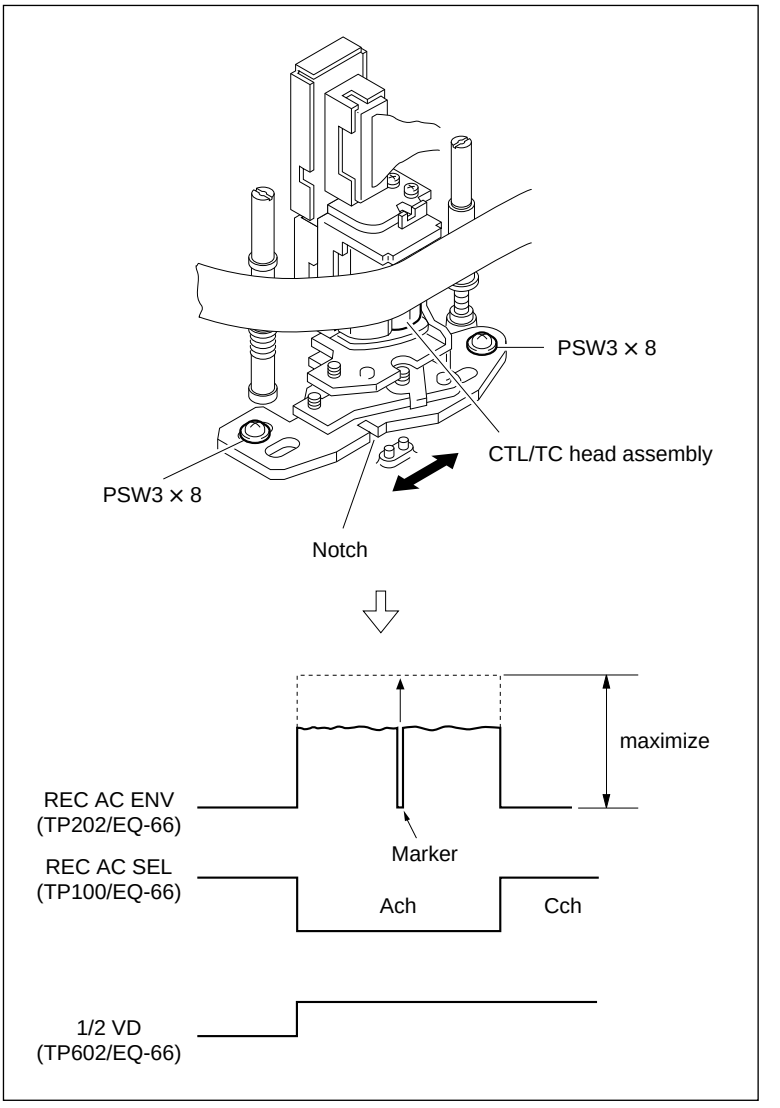
12. Install the CL Guide Rail
Install the CL guide rail with two screws.

In case the adjustment is performed

13. Check the CTL/TC Head Height
Refer to Section 5-5.

14. Check the CTL/TC Head Azimuth
Refer to Section 5-6.

15. Check the CTL/TC Head Position
Refer to steps 5 and 6 in this section.



CTL/TC Head Position Adjustment

5-8. Time Code Level Adjustment in Rev Mode

Equipment

- Oscilloscope
- PC (IBM PC/AT compatible machine)

* For connection of a PC, refer to Section 5-1.

Tools

- Alignment tape YR2-1: 8-960-074-11
- DTF cassette tape (S cassette)
- Small round type mirror J-6080-029-A
- Tape guide adjustment driver (MW-261): J-6322-610-A
- GY-2120 control software (remo.exe)

Preparation

1. Turn the Power Off

2. Connect the Oscilloscope

CH-1: TP703/EQ-66 board (LTC ANA signal)

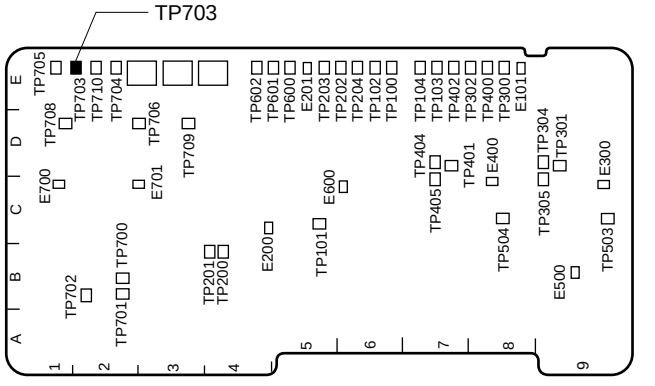
3. Set the Alignment Tape

Set the YR2-1 and put a weight (about 1000 g) on the cassette so that it does not rise up.

* Connection of the oscilloscope

CH-1 **:** TP703/EQ-66 board (LTC ANA signal)

<EQ-66 board, side A>



Preparation

Check

4. Turn the Power On

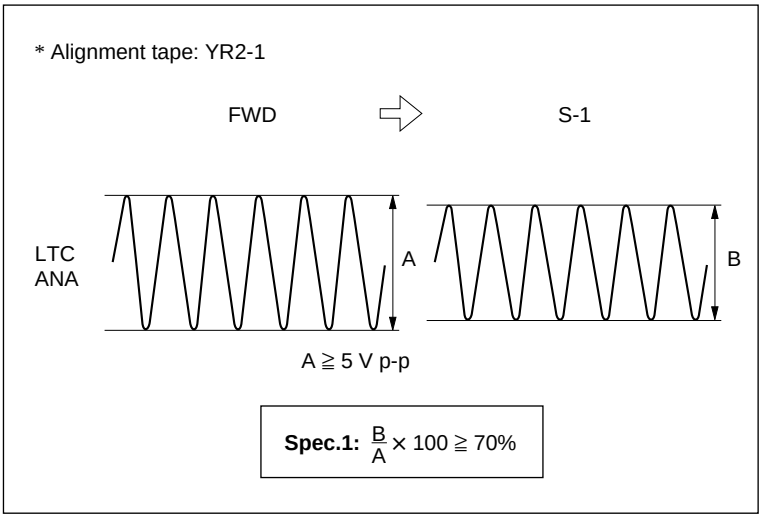
5. Play Back the Alignment Tape
Activate the remo. exe software, and play back the YR2-1. (FWD mode)

6. Check the Time Code Output Level
Check the time code output level A.

7. Put the Unit into S-1 Mode

8. Check the Time Code Output Level
Check that the time code output level B satisfies specification 1.

If the specification 1 is not satisfied, perform steps 9 and later.



Time Code Level Check in REV Mode

Adjustment

9. Adjust the TG-5 (Threading Roller) Height

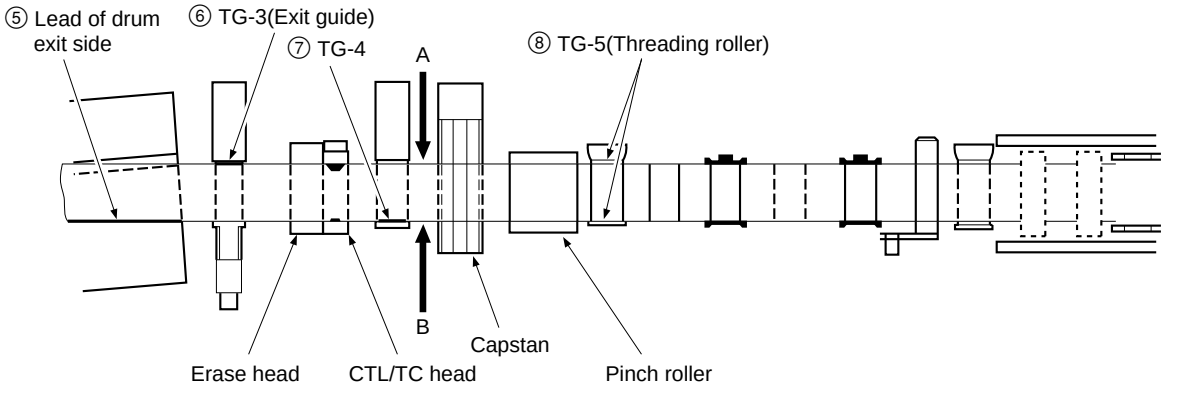
(1) Play back the YR2-1 (IDR:0 to 72000). (FWD mode)
(2) Put the unit into the S-1 mode.
(3) In case the level increases when portion A of the tape shown in the figure is pressed down, turn the upper flange of TG-5 clockwise using a tape guide adjustment driver.
In case the level increases when portion B is pushed up, turn the upper flange of TG-5 counterclockwise.
(4) Check the time code output level satisfies specification 1. (Refer to steps 5 through 8.)

If the specification 1 is not satisfied, repeat steps (1) through (4) mentioned above.

10. Check the Tape Running at Drum Exit Side

In the modes below, check that the tape running condition satisfies specification 2.
(1) FWD mode
(2) S-5 mode
(3) S-1 mode

If specification 2 is not satisfied, adjust the tape guides height at the drum exit side. (Refer to steps 6 through 8 (at the Drum Exit Side) in Section 5-3.)
If the height of the tape guide is adjusted, perform the tracking check. (Refer to Section 5-4.)



Spec.2: ⑤ Lead of drum exit side
The tape runs without any curl at the lead.

⑥ TG-3 (Exit guide)
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.

⑦ TG-4
The tape runs in contact with the lower flange.
The tape curl is less than 1/10 of the tape width.

⑧ TG-5 (Threading roller)
The tape runs without any curl at the lower flange.

Time Code Level Adjustment in REV Mode

5-9. Drum Head Height Check

Equipment

- Oscilloscope
- PC (IBM PC/AT compatible machine)

* For connection of a PC, refer to Section 5-1.

Tools

- Alignment tape YR2-1: 8-960-074-11
- GY-2120 control software (remo.exe)

Preparation

1. Turn the Power Off

2. Connect the Oscilloscope

CH-1: TP602/EQ-66 board (1/2 VD signal)
CH-2: TP202/EQ-66 board (REC AC ENV signal)
CH-3: TP100/EQ-66 board (REC AC SEL signal)
TRIG: TP602/EQ-66 board (1/2 VD signal)

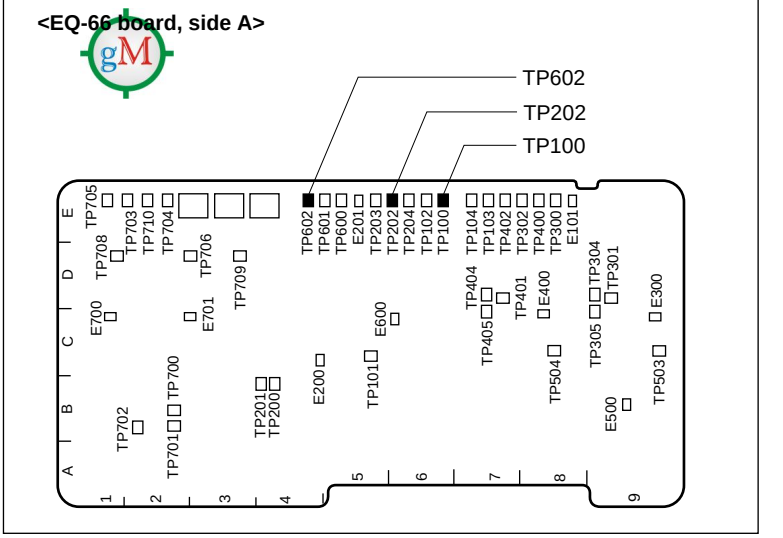
3. Set the Alignment Tape

Set the YR2-1 and put a weight (about 1000 g) on the cassette so that it does not rise up.

* Connection of the oscilloscope

CH-1: TP602/EQ-66 board (1/2 VD signal)
CH-2: TP202/EQ-66 board (REC AC ENV signal)
CH-3: TP100/EQ-66 board (REC AC SEL signal)
TRIG: TP602/EQ-66 board (1/2 VD signal)

<EQ-66 board, side A>



Preparation

Check

4. Turn the Power On

5. Play Back the Alignment Tape

Play back the YR2-1 alignment tape (IDR: 0 to 72000). (FWD mode)

6. Check the Drum Head Height

(1) Press [F8] key of the enter the tracking adjustment mode.
(Refer to Section 1-10-5.)

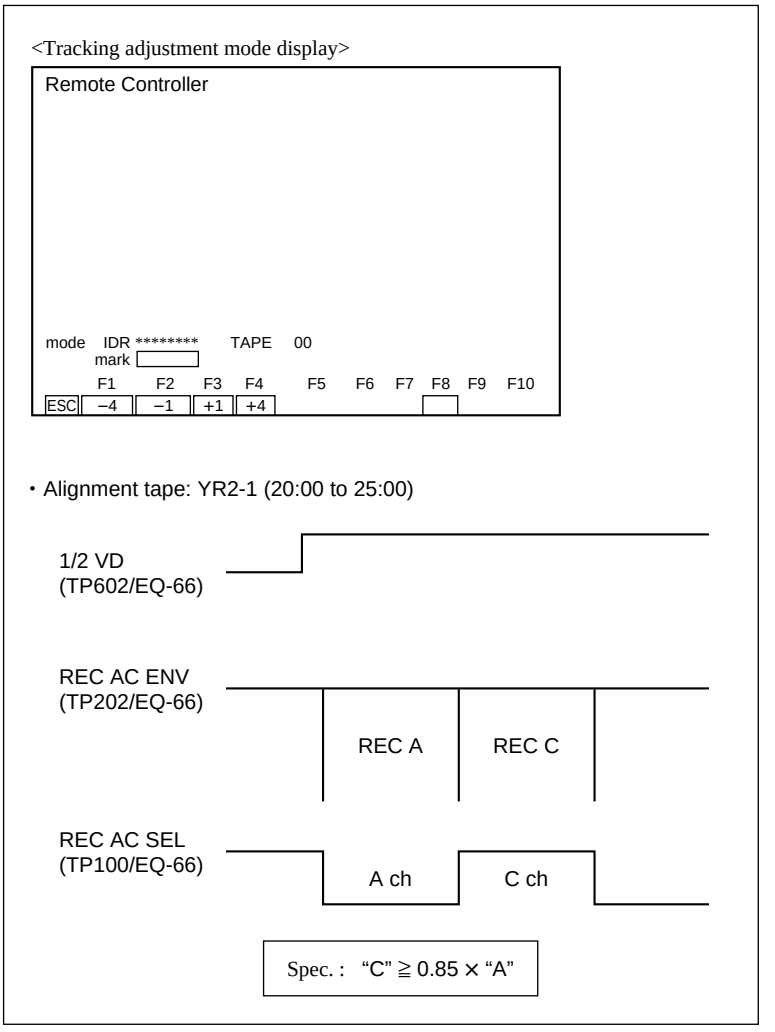
(2) Operate the tracking volume control from the PC so that the output level of RF (REC C) is maximum. This level RF (REC C) max (called “A”) is as 100%.

(3) Operate the tracking volume control from the PC so that the output level of RF (REC A) is maximum. At this time, check the output level of RF (REC C) (called “C”) satisfies the specification.

Spec. : “C” ≧ 0.85 × “A”

Perform this check after replacing the upper drum assembly. If not to meet the specification, reinstall the upper drum assembly. (Refer to Section 3-3-1.)

(4) Press [F8] key of the PC to exit the tracking adjustment mode.



Drum Head Height Check

5-10. CH ERASE Signal Check

Equipment required

- Oscilloscope
- IBM PC/AT compatible machine

*For the connection of a PC, refer to section 5-1.

Tool

- DTF cassette tape (S cassette)
- Extension board EX-602: A-8312-673-A
- Alignment rod (Insulation type)
- GY-2120 control software (remo.exe)

Setting

1. Turn the Power Off.

2. Extend the EQ-66 board using an extension board (EX-602).

3. Oscilloscope connection

CH-1: TP708/EQ-66 board (CH ERASE)
CH-2: TP706/EQ-66 board

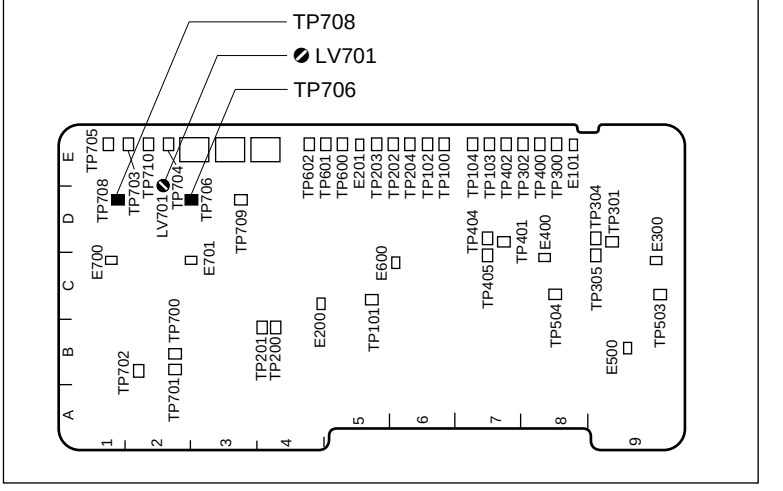
4. Insert a blank tape.

Set the blank tape and put a weight (about 1000 g) on the cassette so that it does not rise up.

* Connection of the oscilloscope

CH-1 **:** TP708/EQ-66 board (CH ERASE)
GND **:** TP706/EQ-66 board

<EQ-66 board, side A>



Preparation

Confirmation

5. Turn the Power On.

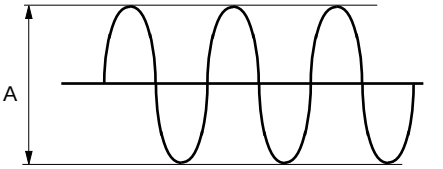
6. Blank tape recording

Activate the remo.exe software and record a signal on the blank tape. (REC mode)

7. CH ERASE output level adjustment

Maximize the CH ERASE output level using ⊘LV701 on the EQ-66 board.

8. After adjustment is completed, check that a CH ERASE signal satisfies the specification.



Level A = 400 ±80 mVp-p
Frequency 42 ±4 kHz

CH ERASE Signal Check

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Section 6
Maintenance Mode

This section describes the maintenance mode required for maintenance.

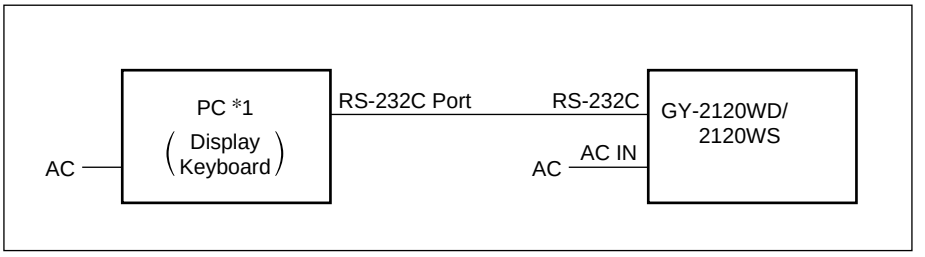
6-1. Outline

The maintenance mode of the GY-2120 can be used by entering commands from the terminal of a personal computer (refered to as a PC hereafter) that is connected to the RS-232C connector.

6-1-1. Equipment Required and Connection

The following equipment is required to use the maintenance mode. Each equipment is connected as shown in the figure below.

- PC (IBM PC/AT compatible computer)
- RS-232C cross cable*2
- Terminal emulator software*1 (compatible with DEC VT100)
- GY-2120 control software (remo.exe)
- YR2-1 (Alignment tape): Sony part No. 8-960-074-11
- YR5-1 (Alignment tape): Sony part No. 8-960-074-01
- Recording tape (Cassette tape for DTF)



*1: The RS-232C port of a PC is set as described below. (For the change of setting, refer to the operation manual of a PC or the manual of the terminal emulator software installed in a PC.)
Communication baud rate: Set to the baud rate of the GY-2120*3.
Character length: 8 bits
Stop bit: 1 bit
Parity: None

*2: For the RS-232C cable that connects the GY-2120 and terminal, refer to Section 1-4.

*3: Set SETUP switch 8 on the rear panel to OFF during connection when the baud rate of GY-2120 is unknown. (In this case, the baud rate is connected at 9600 bps.)

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IBM PC/AT is a registered trademark of IBM corporation

Note

Example of Screen Displays When Connected (Tape Information During Load/Unload/Fast Load/Fast Unload)

```
========================================================================
Volume Count[ 1]       LEOT ID [ 364000]
Init Number[00005d5f2] Over-write Counter[      0]
========================================================================
### VOL  0 ###
BOP ID[     1720]       EOP ID    [ 364000]
BOD ID[     3501]       EOD ID    [     6863]
File Count[        3]   LIDT Count[       14]  Badspot Count[       2]
Init Number[0005de00]   Over-write Counter[       7]
Mount Count[       11]  Volume OWC[       0]
========================================================================
```

Volume Count [1] : Volume (Partition) number
When Multi Volume (Partition), there will be several volumes.

LEOT ID [364000] : Logical End Of Tape ID

Init Number [0005d5f2] : For Multi Volume (Partition), VSIT Initial No.
(Necessary when recovering with the Multi Volume (Partition))

Over-write Counter [0] : Counts up when the Volume (Partition) was erased.
(Necessary when recovering with the Multi Volume (Partition))

VOL 0 ### : Volume (Partition) No.
Always “0” if not Multi Volume (Partition)

BOP ID [1720] : Beginning Of Volume (Partition) ID

EOP ID [364000] : End Of Volume (Partition) ID

BOD ID [3501] : Beginning Of user Data ID

EOD ID [6863] : End Of user Data ID

File Count [3] : File mark number

LIDT Count [14] : Logical ID Table number
Value calculated by (User ID − (Dummy + EOD + Bad Spot))/200

Badspot Count [2] : Bad spot number

Init Number [0005de00] : Tape Initial No.
Unique No. that can be attached during Tape Erase

Over-write Counter [7] : Value counted up when the effective data was overwritten.
Does not count up during Append Rec.
However, counts up in the same way as the Mount count to be recorded for systems which destroys one Tape Mark when writing two Tape Marks and recording the file.
For example, when the System V UNIX is the Host computer, if using Peta Serve, SM-Arch, the same value as Mount count for recording is obtained.
In other words, Mount Count indicates the number of back ups (= Migration), Mount Count − Overwrite Counter, Restore (= Reload).

Mount Count [11] : Value counting up when mounted.

Volume OWC [0] : Volume (Partition) Over Write Counter
Always “0” if not Multi Volume (Partition)

6-1-2. Activation of Maintenance mode

Note

The result display and numerical value on the terminal screen described in this section are one example and differ from those of the actual unit. Both capital and small letters can be entered as an alphabetical character unless otherwise specified.
In this section, “CTRL-C” key means that “CTRL” key and “C” key are used combination.

Self-dignosis mode (For more details, refer to Section 6-2-1.)

This mode is used to check the GY-2120.

Activation : Enter “DIAG” from the PC in a capital letter and press the ENTER key.
Termination : Enter “QUIT” from the PC and press the ENTER key.

Log display mode (For more details, refer to Section 6-2-2.)

This mode is used to display the history of the SCSI sequence and internal operation state.

Activation : Enter “LOG” from the PC in a capital letter and press the ENTER key.
Termination : Enter “QUIT” from the PC and press the ENTER key.

Download mode (For more details, refer to Section 6-2-3.)

This mode is used to download the firmware of GY-2120.

Activation : Enter “FDL” from the PC in a capital letter and press the ENTER key.
Termination : Enter “QUIT” from the PC and press the ENTER key.

Vendeor information set mode (For more details, refer to Section 6-2-4.)

This mode is used to set each vendor information.

Activation : Enter “CUSTOM” from the PC in a capital letter and press the ENTER key.
Termination : Enter “QUIT” from the PC and press the ENTER key.

Service set mode (For more details, refer to Section 6-2-5.)

This mode is used to set the baud rate of RS-232C.

Activation : Enter “SERV” from the PC in a capital letter and press the ENTER key.
Termination : Enter “QUIT” from the PC and press the ENTER key.

Notes

This mode is available only when No.8 of DIP switch on the rear panel is ON.

Drive maintenance (MDRV) mode (For more details, refer to Section 6-2-6.)

This mode is used to check and adjust the drive of the GY-2120.

Activation : Enter “MDRV” from the PC in a capital letter and press the ENTER key.
Confirm that “MDRV=>” is displayed on the PC, then enter “2” and press the ENTER key.
Termination : Enter “QUIT” from the PC and press the ENTER key.
Confirm that “MDRV=>” is displayed on the PC, then enter “QUIT” and press the ENTER key.

6-2. Command Description

The menu structure of the GY-2120 is shown below.
**** Menu structure of GY-2120 ****

TOP

- ROM ----- ROM Version Display

- DIAG ----- (diagnostic mode)
  - 1 : All check
  - 3 : DIP Switch setting display
  - 4 : Hours meter display
  - 5 : ROM version display
  - 6 : Serial No. display
  - 11 : SCSI CPU all check
  - 12 : 2-port RAM communication check
  - 13 : DSP board LCD check
  - 14 : DSP board LED check
  - 15 : SCSI CPU ROM check
  - 16 : SCSI CPU RAM check
  - 21 : SYS CPU all check
  - 22 : SYS CPU ROM check
  - 23 : SYS CPU RAM check
  - 31 : All loopback check
  - 32 : Loopback-3 (MA)
  - 33 : Loopback-2 (EQ-2)
  - 34 : Loopback-1 (EQ-1)
  - 35 : All Loopback check (infinte)
  - 41 : Bank memory check
  - 51 : IF all check
  - 52 : IF CPU ROM check
  - 53 : IF CPU RAM check
  - help : Display help
  - quit : Quit

- LOG ----- (log display mode)
  - 1 : Detail SCSI protocol
  - 2 : 2-port RAM command (SCSI CPU → SYS CPU)
  - 3 : SCSI Command sequence
  - 4 : Other history
  - 5 : Serial Command sequence
  - 97 : Bus Error Counter
  - 98 : Media Error Counter
  - clear : clear log
  - upload : log upload
  - alog : All log upload
  - help : Display help
  - quit : Quit

• FDL - - - - - (firmware download mode)
- 1 : SCSI CPU download
- 2 : SYS CPU download
- 3 : SV CPU download
- 4 : IF CPU download
- 99 : Download Tape

help : Display help
quit : Quit

• CUSTOM- - - - - (inquiry info. set mode)
- 1 : Vendor information set
- 2 : Vendor information display

help : Display help
quit : Quit

• SERV - - - - - (operation mode set mode)
- 1 : Display service values
- 2 : Set all service values

- 11 : Display baud rate
- 13 : Display ignore wide residue mode
- 14 : Display BT bit ignore mode
- 15 : Display REW bit mode

- 21 : Set baud rate
- 23 : Set ignore wide residue mode
- 24 : Set BT bit ignore mode
- 25 : Set REW bit mode

- 71 : Display PetaServe mode
- 72 : Display A-A mode
- 73 : Display COMP mode
- 81 : Set PetaServe mode
- 82 : Set A-A mode
- 83 : Set COMP SW mode

help : Display help
quit : Quit

• MDRV - - - - - + - - (DRV CPU test mode)
- quit : Quit Tool
- help : Display help Menu

- 1 : Remote Control/ERR DOG
- 80 : SYS/SV All Log Upload
- 81 : MDRV All Log Upload
- 85 : SV Log Upload
- 86 : Base Mode Log Upload
- 87 : Status Log Upload
- 88 : Time Code Log Upload
- 95 : SV Log display
- 96 : Base Mode Log Display
- 97 : Status Log Display
- 98 : Time Code Log Display
- 2 : SV/RF Maintenannce Mode +

```
¦
+ - - sv            : Servo Adjust/Check help
      <<SVxx : SERVO Exec >>
      SV01          : Reel/Capstan all Adjust
      SV02          : S Reel FG Duty Adjust
      SV03          : T Reel FG Duty Adjust
      SV04          : Capstan FG Duty Adjust
      SV05          : S Reel Offset/Friction Adjust
      SV06          : T Reel Offset/Friction Adjust
      SV07          : S Reel Torque Adjust
      SV08          : T Reel Torque Adjust
      SV09          : S/T Tension Offset Adjust
      SV0A          : Free Speed Adjust
      SV0B          : RF Switching Position Adjust
      SV0C          : SV NV-RAM Save
      SV0D          : Cassette Switch Check
      SV0E          : Cassette Comp. Switch Check
      SV0F          : Tape Top/End Sensor Check
      SV10          : Dew Sensor Check
      SV11          : S Reel Motor Check
      SV12          : T Reel Motor Check
      SV13          : Threading Motor Check
      SV14          : Cassette Comp. Motor Check
      SV15          : Capstan Motor Check
      SV16          : Drum Motor Check
      SV17          : Reel Shift Motor Check
      SV18          : Pinch Roller Solenoid Check
      SV19          : S Reel Brake Solenoid Check
      SV1A          : T Reel Brake Solenoid Check
      SV1B          : Cleaning Roller Solenoid Check
      SV1C          : Reel/Capstan Motor & FG Check
      SV1D          : SAT Function Check
      SV1E          : Manual PG Adjustment
      SV1F          : SV Initial Data Set
      rf            : RF Adjust/Check help
      <<RVxx : RF Exec >>
      RF01          : PB All Adjust
      RF02          : PB Level Adjust
      RF03          : PB PLL Adjust
      RF04          : PB Equalizer Adjust
      RF05          : REC Current Adjust
      RF06          : RF Adjust Data Display
      RF07          : RF NV-RAM Save
      RF08          : RF NV-RAM Load
      RF09          : RF Initial Data Set

      hours         : Hours Meter
      hrr           : Hours Meter Reset
      savehours     : Save Hours Meter
      presethours   : Preset Hours Meter
      err           : System Error Code Check
      help          : Display help
      quit          : Quit
```

6-2-1. Self-Diagnosis Mode (DIAG)

This mode is used to check the GY-2120. Moreover, the following items can be displayed in this self-diagnosis mode.

- State of DIP switches on the boards.
- Hours meter
- ROM versions
- Serial numbers of GY-2120

The self-diagnosis mode is activated when “DIAG” are entered from the PC in a capital letter. Message “DIAGNOSTIC=>” is then displayed as prompt. Entered a command number (or command) after this prompt and press the ENTER key. The command function is executed at that time.
Enter “QUIT” after this prompt and press the ENTER key. The self-diagnosis mode is then terminated.

Note

The self-diagnosis mode cannot be activated from another mode. Terminate another mode, then enter “DIAG”.

Help command

In the self-diagnosis mode, there is a help command that displays the function list in this mode. To execute this help command, enter a command and press the ENTER key.

```
DIAGNOSTIC=>help

+===[ DIAGNOSTIC MENU ]=============================================================+
|                                                                                   |
| quit: Quit Tool         help: Display Help Menu                                   |
|                                                                                   |
|    1: All Check            3: Dip Switch          4: Hours Meter                  |
|    5: ROM Version           6: Serial No.                                         |
|                                                                                   |
|  << SCSI CPU >>          << SYS CPU >>          << Data Loopback Check >>         |
|   11: All Check            21: All Check          31: All Check                   |
|   12: 2-Port Comm.         22: ROM Check          32: Loopback-3(MA)              |
|   13: LCD Check            23: RAM Check          33: Loopback-2(EQ-2)            |
|   14: LED Check                                   34: Loopback-1(EQ-1)            |
|   15: ROM Check                                   35: All Check(Infinite)         |
|   16: RAM Check          << IF CPU >>           << Bank Memory Check >>           |
|                          51: All Check           41: Bank Memory Check            |
|                           52: ROM Check                                           |
|                           53: RAM Check                                           |
|                                                                                   |
|                                    Copyright (c) 19    19** , SONY Corp.          |
+===================================================================================+
```

Function List Display in Self-diagnosis Mode using Help Command

Data Display

a) State Display of DIP Switches in GY-2120 (Self-diagnosis command No. 3)

Enter “3” as a command number and press the ENTER key.
The state of the DIP switches and digital switch (SCSI-ID) in the GY-2120 are displayed as shown below.

```
DIAGNOSTIC => 3

 ##########[ SWITCH DISPLAY ]###################################
 |  Sw Name    |  1  |  2  |  3  |  4  |  5  |  6  |  7  |  8  |
 +-------------+-----+-----+-----+-----+-----+-----+-----+-----+
 |  REAR PANEL | OFF | OFF | OFF | OFF | OFF | OFF | OFF | ON  |
 +-------------+-----+-----+-----+-----+-----+-----+-----+-----+
 |  SCSI-ID    |  5  |  -  |  -  |  -  |  -  |  -  |  -  |  -  |
 +-------------+-----+-----+-----+-----+-----+-----+-----+-----+
 |  IF S201    | OFF | OFF | OFF | OFF |  -  |  -  |  -  |  -  |
 +-------------+-----+-----+-----+-----+-----+-----+-----+-----+
 |  IF S202    | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
 +-------------+-----+-----+-----+-----+-----+-----+-----+-----+

DIAGNOSTIC=>
```

b) **Display of Hours Meter** (Self-diagnosis command No. 4)

Enter “4” as a command number and press the ENTER key.
The information of an hours meter is displayed as shown below. These information items are used for maintenance of the GY-2120.

```
DIAGNOSTIC=>4

########[ HOURS METER DISPLAY ]###################################
|Operation | Drum-1   | Drum-2   | Drum-3   | Tape run |Threading |
|  [hours]|  [hours]|  [hours]|  [hours]|  [hours]|  [times]|
+----------+----------+----------+----------+----------+----------+
| 00001020 | 00000705 | 00000023 | 00000000 | 00000511 | 00000068 |
+----------+----------+----------+----------+----------+----------+

DIAGNOSTIC=>
```

Description of display

Operation : Sum of energied time

Drum-1 : Sum of drum rotating time (1) (Resettable)
This is a meter for periodic maintenance of the GY-2120. The meter can be reset by the GY-2120.

Drum-2 : Sum of drum rotating time (2)
This is a meter for periodic cleaning of the GY-2120. The meter is automatically reset when the GY-2120 by using the cleaning tape.

Drum-3 : Unassigned

Tape run : Sum of tape running time (Resettable)
This is a meter for periodic maintenance of the GY-2120. The meter can be reset by the GY-2120.

Threading : Sum of threading (Resettable)
This is a meter for periodic maintenance of the GY-2120. The meter can be reset by the GY-2120.

c) **Display of ROM Versions** (Self-diagnosis command No. 5)

Enter “5” as a command number and press the ENTER key.
The ROM versions in the GY-2120 are displayed as shown below.

```
DIAGNOSTIC=>5

*** [ ROM VERSION DISPLAY ]  ***

[FW Rev] GY1.xx

[SCSI]  1.xx
[SYS]   1.xx
[IF]    1.xx
[SV]    1.xx
[EQ]    1.xx
[DR]    1.xx

DIAGNOSTIC=>
```

d) **Serial Number Display** (Self-diagnosis command No. 6)

Enter “6” as a command number and press the ENTER key.
The serial number set in the GY-2120 is displayed as shown below.

```
DIAGNOSTIC=>6

*** [ SERIAL NUMBER DISPLAY ]  ***
 Serial No. : 00010001

 DIAGNOSTIC=>
```

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SCSI CPU Block Check

a) 2-Port Communication Check (Self-diagnosis command No. 12)

Enter “12” as a command number and press the ENTER key.
The dual port RAM between the SCSI CPU and DRIVE CPU is automatically checked for operation.

```
DIAGNOSTIC=>12

-------[ 2-Port Communication Check ]-------
Start    ******** OK

DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!(ERROR:xxxxxxxx WARNING:yyyyyyyy)” is displayed.
“xxxxxxxx” indicates the error code, and “yyyyyyyy” indicates the warning code.

b) LCD Check (Self-diagnosis command No. 13)

Enter “13” as a command number and press the ENTER key.
Whether the display on the LCD is normal is checked.

Check operatoin procedure

1. Displays the character string corresponding to the entered code on the LCD for about one second.
2. Outputs the code of the displayed character string from the LCD block.
3. Compares the code of the entered character string with that of the character string displayed on the LCD.

```
DIAGNOSTIC=>13

-------[ LCD Check ]-------
LCD Test           ******** OK

DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!(STRING:xxxxxxxxxxxxxxxx)” is displayed.
“xxxxxxxxxxxxxxxx” indicates the character string displayed on the LCD.

c) **LED Check** (Self-diagnosis command No. 14)

Enter “14” as a command number and press the ENTER key.
Whether the LED lights/goes off normally is checked.

Check operatoin procedure

1. Turn off all the LEDs on the front panel (DSP-78 board) for one second and confirm that they go off.
2. Turn on all the LEDs on the front panel (DSP-78 board) for one second and confirm that they light.
   (After confirmation, these LEDs return to the former state.)

```
DIAGNOSTIC=>14

-------[ LCD Check ]-------
Stat               OK

DIAGNOSTIC=>_
```

In case that the check succeeds;

Message “OK” is displayed.

In case that the check fails;

Message “ERROR!!(xx:yyy)” is displayed.

d) **ROM Check** (Self-diagnosis command No. 15)

Enter “15” as a command number and press the ENTER key.
The sum of ROMs in a SCSI CPU block is checked automatically.

```
DIAGNOSTIC=>15

-------[ ROM Check(SCSI CPU) ]-------
ROM Check          ******** OK

DIAGNOSTIC=>_
```

In case that the check succeeds;

Message“OK” is displayed.

In case that the check fails;

Message “ERROR!!” is displayed.
In this case, stop the GY-2120 operation immediately. Moreover, replace the MA-83 board which mounts the ROM.

e) **RAM Check** (Self-diagnosis command No. 16)

Enter “16” as a command number and press the ENTER key.
The sum of RAMs in a SCSI CPU block is checked automatically.

```
DIAGNOSTIC=>16

 -------[ RAM Check(SCSI CPU) ]-------
 Start               OK

 DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!(error count:xxxxxxxx)” is displayed.
“xxxxxxxx” indicates the number of error words.

f) **All Check** (Self-diagnosis command No. 11)

Enter “11” as a command number and press the ENTER key.
Command numbers 12 to 16 are checked automatically and continuously.

Note

The entry character string in LCD Check is fixed in “LCD-TEST-PATTERN”. It is not necessary to enter a character string from PC.

```
DIAGNOSTIC=>11

-------[ 2-Port Communication Check ]-------
Start               ******** OK
-------[ LCD Check ]-------
LCD Test             ******** OK
-------[ LED Check ]-------
Start                OK
-------[ ROM Check (SCSI CPU) ]-------
ROM Check           ******** OK
-------[ RAM Check (SCSI CPU) ]-------
Start                OK

SCSI CPU Test       ******** OK ********

DIAGNOSTIC=>_
```

In case that the check succeeds;

Message “SCSI CPU Test ******** OK ********” is displayed lastly.

In case that the check fails;

Refer to “In case that the check fails;” of the each corresponding command (number).

SYS CPU Block Check

a) ROM Check (Self-diagnosis command No. 22)

Enter “22” as a command number and press the ENTER key.
The sum of ROMs in a DRIVE CPU block is checked automatically.

```
DIAGNOSTIC=>22

 -------[ ROM Check(SYS CPU) ]-------
 ROM Check          ******** OK

 DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!” is displayed.
In this case, stop the GY-2120 operation immediately. Moreover, replace the MA-83 board which mounts the ROM.

b) RAM Check (Self-diagnosis command No. 23)

Enter “23” as a command number and press the ENTER key.
The work memory of the SYS CPU is checked automatically.

```
DIAGNOSTIC=>23

 -------[ RAM Check(SYS CPU) ]-------
 RAM Check          ******** OK

 DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!(error count:xxxxxxxx)” is displayed.
“xxxxxxxx” indicates the number of error words.

c) **All Check** (Self-diagnosis command No. 21)

Enter “21” as a command number and press the ENTER key.
Command numbers 22 and 23 are checked automatically and continuously.

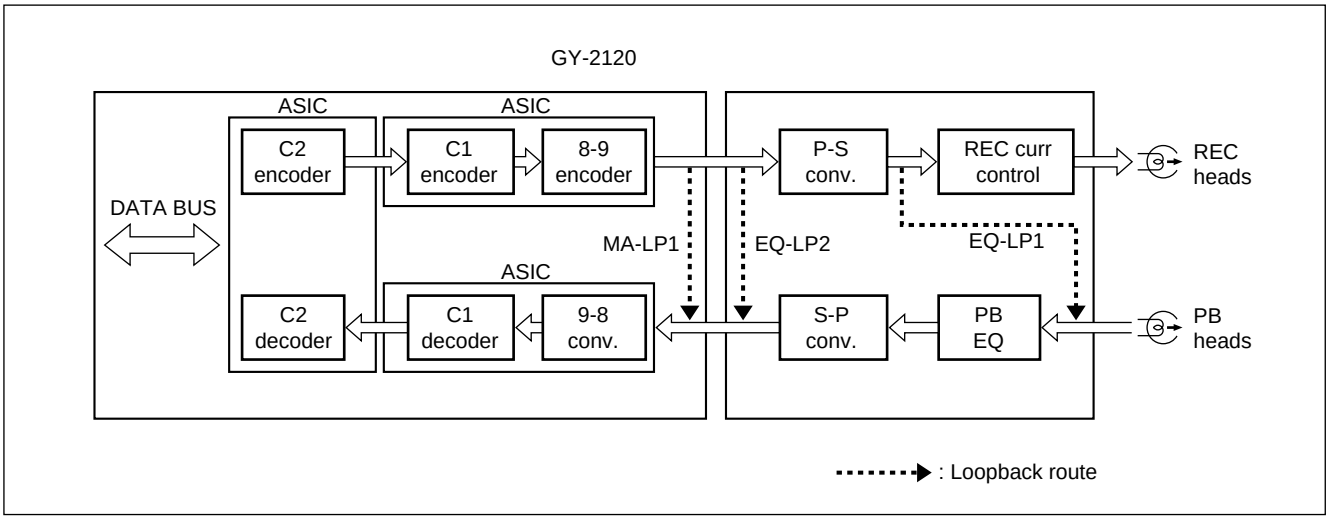
```
DIAGNOSTIC=>21

-------[ RAM Check(SYS CPU) ]-------
RAM Check           ******** OK
-------[ ROM Check(SYS CPU) ]-------
ROM Check           ******** OK

SYS CPU Test        ******** OK ********

DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “SYS CPU Test ******** OK ********” is displayed lastly.

In case that the check fails;
Refer to “In case that the check fails;” of the each corresponding command (number).

Data Loopback Check

The operation of each block can be checked by turning back the write data as the read data in the course of a circuit without passing through the tape. There are two loopback routes in the EQ-66 board and one loopback route in the MA-83 board.



Mimic Diagram of Loopback Route

a) Loopback-3 Check (Self-diagnosis command No. 32)
Loopback-2 Check (Self-diagnosis command No. 33)
Loopback-1 Check (Self-diagnosis command No. 34)

These checks are the same in contents of description except their different loopback position.
Therefore, a Loopback-3 Check (command No.32) is described below as an example.

Enter “32” as a command number and press the ENTER key.
The loopback is set to LP-3 and the operation is checked automatically.

```
DIAGNOSTIC=>32

-------[ Loopback Check(LP-3) ]-------
MA loop  Check
RAMDOM MODE      ******** OK
*1
DIAGNOSTIC=>_
```

*1: Indication on this part changes in the order of “INC”->”aa55"->”00ff”->”RANDOM” according to the test data during execution.

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!(error count:xxxxxxxx)” is displayed.
“xxxxxxxx” indicates the number of error words.

6-2. Command Description

b) **All Check** (Self-diagnosis command No. 31)

Enter “31” as a command number and press the ENTER key.
Command numbers 32 to 34 are checked automatically and continuously.

```
DIAGNOSTIC=>31

-------[ Loopback Check(LP-3) ]-------
MA loop Check
 RAMDOM MODE       ******* OK
-------[ Loopback Check(LP-2) ]-------
EQ-2 loop Check
 RAMDOM MODE       ******* OK
-------[ Loopback Check(LP-1) ]-------
EQ-1 loop Check
 RAMDOM MODE       ******* OK

 LP Test           ******** OK ********

DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “LP Test ******** OK ********” is displayed lastly.

In case that the check fails;
Message “ERROR!!(error count:xxxxxxxx)” is displayed.
“xxxxxxxx” indicates the number of error words.

Bank Memory Check

a) **Bank Memory Check** (Self-diagnosis command No. 41)

Enter “41” as a command number and press the ENTER key.
The RAM for bank memory is checked automatically.

```
DIAGNOSTIC=>41

 -------[ Bank Memory Check ]-------
 Bank Memory  ******** OK

 DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!(error count:xxxxxxxx)” is displayed.
“xxxxxxxx” indicates the number of error words.

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IF CPU Block Check

a) ROM Check (Self-diagnosis command No. 52)

Enter “52” as a command number and press the ENTER key.
The sum of ROMs in a IF CPU block is checked automatically.

```
DIAGNOSTIC=>52

-------[ IF CPU ROM Check ]-------
Start         OK

DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!” is displayed.
In this case, stop the GY-2120 operation immediately. Moreover, replace the IF-682/683 board which mounts the ROM.

b) RAM Check (Self-diagnosis command No. 53)

Enter “53” as a command number and press the ENTER key.
The work memory of the IF CPU is checked automatically.

```
DIAGNOSTIC=>53

-------[ IF CPU RAM Check ]-------
Start         OK

DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “OK” is displayed.

In case that the check fails;
Message “ERROR!!(error count:xxxxxxxx)” is displayed.
“xxxxxxxx” indicates the number of error words.

c) **All Check** (Self-diagnosis command No. 51)

Enter “51” as a command number and press the ENTER key.
Command numbers 52 and 53 are checked automatically and continuously.

```
DIAGNOSTIC=>51

-------[ IF CPU ROM Check ]-------
Start        OK
-------[ IF CPU RAM Check ]-------
Start        OK

SYS CPU Test        ******** OK ********

DIAGNOSTIC=>_
```

In case that the check succeeds;
Message “IF CPU Test　******** OK********” is displayed lastly.

In case that the check fails;
Refer to “In case that the check fails;” of the each corresponding command (number).

6-2-2. Log Display Mode

This mode is used to display the history of the SCSI sequence and internal operation state.

The log display mode is activated when “LOG” are entered from the PC in a capital letter. Message “LOG=>” is then displayed as a prompt. Enter a command number (or command) after this prompt and press the ENTER key. Command function is executed at that time.
Enter “QUIT” after this prompt and press the ENTER key. The log display mode is then terminated.

Note

The log display mode cannot be activated from another mode. Terminate another mode, then enter “LOG”.

Help command

In the log display mode, there is a help command that displays the function list in this mode. To execute this help command, enter a command and press the ENTER key.

```
LOG=>help

+===[ LOGGER MENU ]=============================================================+
|                                                                               |
| quit: Quit Tool                help: Display help Menu                        |
|                                                                               |
| clear: Clear Log                upload: Log Upload                            |
|                                alog  : All Log Upload                         |
|                                                                               |
|  1: Detail SCSI Protocol             2: 2-Port RAM Command                    |
|  3: SCSI Command Sequence             4: Other History                        |
|  5: Serial Command Sequence                                                   |
| 97: Bus Error Counter               98: Media Error Counter                   |
|                                                                               |
|                                  Copyright (c) 19    19** , SONY Corp.        |
+===============================================================================+
```

Function List Display in Log Display Mode using Help Command

Clear command

This command is used to clear the contents of all logs. To execute this clear command, enter “clear” and press the ENTER key.

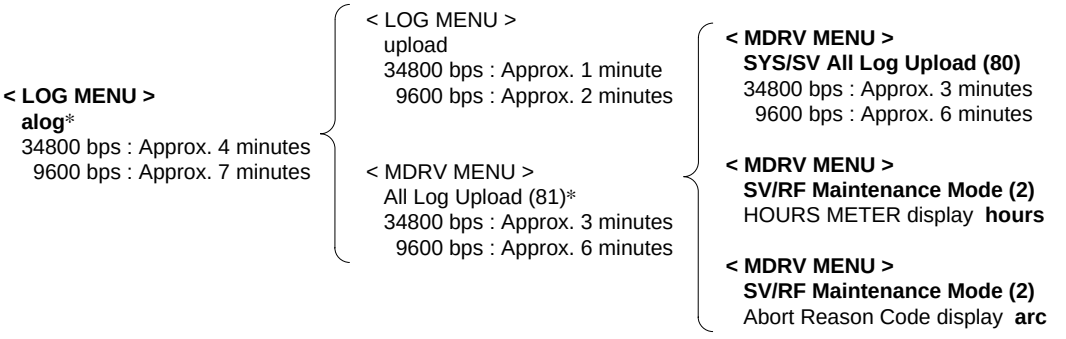
Note

The cleared log data cannot be restored.

Log Upload command

This command is used to upload the contents of all log on the PC, etc.
Enter the “alog” after accomplishing the text’s capture condition, then press the ENTER key.

LOG Configuration and Required Time

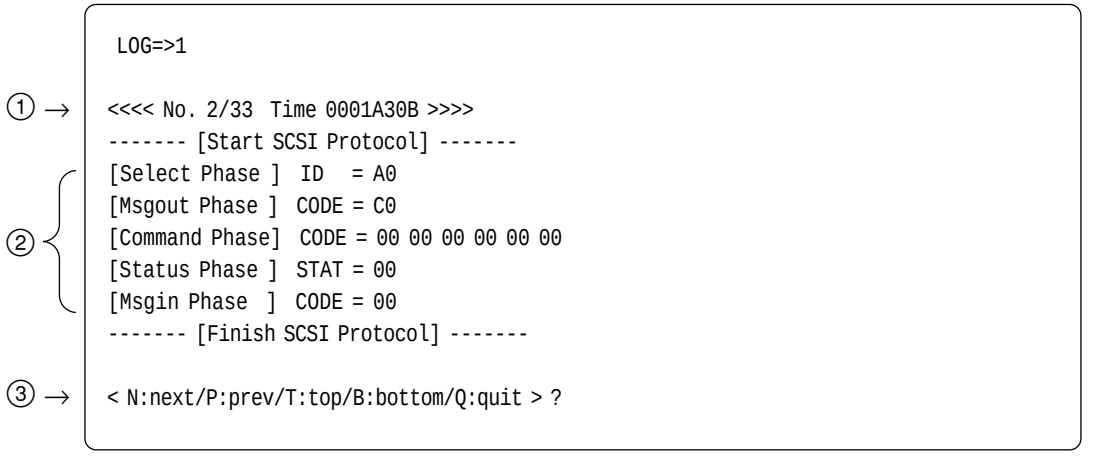


* : Functions added after GY1.10.

( ) : Contains the command number.

a) **Detail SCSI Protocol** (Log command No. 1)

Enter “1” as a command number and press the ENTER key.
The last four SCSI sequences sent from the host computer are displayed at that time.



Description of display

① <<<< No. 2/33 Time 0001A30B >>>>

Time passed after GY-2120 activation (in hexadecimal and in units of 10 ms)

Log number/number of logs

(Example) Time : 001BF4A5
After starting power, 1BF4A5∗10 ms = 5 hours 5 minutes 21 seconds 10 ms

② Dispalys one SCSI sequence

[Select Phase]	:	Selection phase
[Msgout Phase]	:	Message out-phase
[Msgin Phase]	:	Message in-phase
[Command Phase]	:	Command phase
[Disconnect!!]	:	Disconnect
[Reconnect!!]	:	Reconnect
[DataIN Phase]	:	Data in-phase
[DataOUT Phase]	:	Data out-phase
[Status Phase]	:	Status phase
[SCSI Reset!!]	:	SCSI bus reset
[ILLEGAL INT!!]	:	GY-2120 trouble Abnormal interruption from SCSI chip

③ Description of key entry

P : Displays the previous log.
T : Displays the top log.
B : Displays the bottom log.
Q : Quits this log command.
For except the above, the following logs are displayed.

b) **2-Port RAM Command** (Log command No. 2)

Enter “2” as a command number and press the ENTER key.
Up to 128 communication histories between the SCSI CPU and SYS CPU are displayed at that time.

```
 LOG=>2

>>>>>>>>>>>>>>>>>>>>>>>>[ 2-PORT COMMAND LOG ]<<<<<<<<<<<<<<<<<<<<<<<<
<<<< Log Count : 128 >>>>
① → No..TIME......STATUS..CMD..INFORMATION.............................. BOOT
  1  0001A30B  [SND 6]  02  mode[00000001]         ID [  2601]        000DE
                          len [    30] num[   1]  rst[     0] rty[10]
  2  0001A30B  [RCV 7]  02  ID  [  5244] len[  30]  eod[    0] rty[10] 000DE
           ERROR!!     parm[00000000:00000000:00000000] err[00000123]
  3  0001A30B  [FRE 7]                                                 000DE

  4  0001A331  [SND 7]  02  mode[00000001]         ID [  2601]        000DE
                          len [    30] num[   1]  rst[     0] rty[10]
  5  0001A331  [RCV 0]  02  ID  [  5274] len[  30]  eod[    0] rty[ 7] 000DE
           WARNING     parm[00000000:00000000:00000000] war[80000123]
  6  0001A331  [FRE 0]                                                 000DE

  7  0001A357  [SND 0]  02  mode[00000001]         ID [  2601]        000DE
                          len [    30] num[   1]  rst[     0] rty[10]
  8  0001A357  [RCV 1]  02  ID  [  5304] len[  30]  eod[    0] rty[ 0] 000DE
                         parm[00000000:00000000:00000000]
  9  0001A357  [FRE 1]                                                 000DE

 10  0001A37D  [SND 1]  02  mode[00000001]         ID [  2601]        000DE
                          len [    30] num[   1]  rst[     0] rty[10]
② → < N:next/P:prev/T:top/B:bottom/Q:quit > ?
```

Description of display

Log Count : Number maintained by log (Max. 128)
No : Number inside the number maintained

① TIME : Time passed after GY-2120 activation (in hexadecimal and in units of 10 ms)
STATUS : The following four type are available.
[SND x] : Indicates that a command was sent to packet number x.
[RCV x] : Indicates that the command termination of packet number x was confirmed.
[FRE x] : Indicates that a packet with packet number x was put into the unused state.
[CLR -] : Indicates that all packets were put into the unused state.
CMD : Command from SCSI CPU to SYS CPU. (Hexadecimal display)
(Refer to “Commands to SYS CPU”)
INFORMATION : Indicates the argument for each command.
BOOT : Number of boots increased by one when GY-2120 is started.

② Description of key entry
P : Displays the previous log.
T : Displays the top log.
B : Displays the bottom log.
Q : Quits this log command.
For except the above, the following screen is displayed.

Commands to SYS CPU

Code (Hex)	Command Name	Function
1	CONTINUOUS READ	Reads the required data continuously without stopping the tape
2	CONTINUOUS WRITE	Writes the required data continuously without stopping the tape
3	SINGLE READ	Reads the data from the tape (Max. is the bank memory capacity)
5	PREROLL	Moves the tape in front of the ID specified
6	NEW TAPE	Checks if the inserted tape has been written or not
7	REWIND	Rewinds the tape
8	EJECT	Ejects the tape from the drive
9	MAKE ID	Writes the IDs specified on the tape
B	MODE SETTING	(Not used)
C	BANK REPLACEMENT	Requests change to the specified bank to the SYS CPU
E	FAST FWD	Fast forwards the tape
F	STOP	Sets the tape to STANDBY OFF
D (10)	BANK INFORMATION SETTING	Sets the bank number/address of each bank
D (12)	SERIAL COMMUNICATION	Opens the RS232C MDRV
D (13)	DOWNLOAD	Downloads the SYS, SV CPU firmware
D (14)	INITIAL	Initial check
D (15)	IDS SEARCH	Moves the tape to the specified IDC using the ID Counter
D (16)	ERROR RATE MEASUREMENT	Sets the SYS CPU to the error rate measurement mode
D (17)	SELF-DIAGNOSIS	Executes self-diagnosis
D (18)	IDC SENSE	Obtains the value of the ID Reader at the current tape position
D (19)	LONGITUDINAL SEARCH	Searches whether the CTL/LTC is present or not
D (1A)	IN POINT SET	Sets the read/write ID specified by PREROLL again

Meaning of Terms

- Bank
  Also called packet.
  Buffer memory for accumulating the data to be read/written.
  GY-2120 splits the buffer memory into 2 banks or 8 banks, and reads/writes in units of banks.
  Therefore, all CMDs from the SCSI CPU to the SYS CPU are issued by specifying the bank No.

- PREROLL
  Moves the tape forward for the distance required for phase adjustment from the read/write starting point (IN point) and stands by.
  PREROLL is always required before starting read/write.
  However, as automatic PREROLL called repositioning is performed when read/write ends, PREROLL CMD may not be issued. When PREROLL is continuously being executed without stopping the tape by continuous read/write CMD, PREROLL is not performed because phase need not be adjusted.

- FWD
  Short for Forward

- MDRV
  MDRV CMD from the test terminal

- DPR
  DPR (Data Processor)
  Block which carries out data processing such as C1/C2 encoding which adds data to the ECC (Error Correction Code) and C1/C2 decoding which decodes the data using ECC.

- Parity error
  Error of data detected at the data receiving side by the parity bit added to the data at the side sending the data.

Error Codes from SYS CPU

Codes	Contents
0000011B	Failed in downloading to the SYS CPU or SV CPU
00000123	Could not READ/WRITE from/to the tape properly even after the specified retry process
00000124	The servo did not lock at the start of READ/WRITE
00000125	The servo fails during READ/WRITE
00000126	Tape positioning error
00000128	Failed in resetting the ID for starting READ/WRITE.
00000129	Detected change in ID during READ/WRITE.
00000147	Firming error occurred in the data sent to DPR from the memory.
00000148	Firming error occurred at the DPR of the data sent to the memory the from the DPR.
00000149	Firming error occurred at the memory of the data sent to the memory the from the DPR.
0000013A	Time out although the DATA READY signal for transmission start was waited
0000013B	Could not read the ID at the start of READ/WRITE
0000013C	There were some areas not recorded with the ID during READ
0000013D	There were some areas not recorded with CTL
00000141	Parity error occurred at the memory while the data sent to DPR from the memory
00000142	Parity error occurred at the DPR while the data sent to DPR from the memory
00000143	Parity error occurred at the DPR while the data sent to the memory from the DPR
00000144	Parity error occurred at the memory while the data sent to the memory from the DPR
00000145	1-bit error occurred in the memory, and it is corrected
00000146	More than 2-bit error occurred in the memory
0000015C	Cassette is write-prohibited
0000017A	Attempted to READ/WRITE during tape end
0000017B	Tape end occurred during READ/WRITE
0000017C	Received REW at the tape top
0000017E	Different from the completed state when tape operations complete
0000017F	Time-out after waiting for the instructed tape operations to start/end
000001BB	Could not eject the cassette when executing the servo adjustment/check command.
000001Cy	Error occurred at initial check (y: initial check error code)

c) **SCSI Command Sequence** (Logger command No. 3)

Enter “3” as a command number and press the ENTER key.
Up to 384 histories of the SCSI command sent from the host computer are displayed at that time.

```
 LOG=>3

>>>>>>>>>>>>>>>>>>>>>>>>>[ SCSI SEQUENCE LOG ]<<<<<<<<<<<<<<<<<<<<<<<<<<<<
<<<< Log Count : 210 >>>>
① →  No..TIME......COUNT..COMMAND LIST..................STAT...WIDE..SYNC...BOOT
   1  0000A90B     1  05 00 00 00 00 00             CC      --   -----  00153

   2  0000A90B     1  03 00 00 00 0E 00             GOOD    --   -----  00153
                    [DATA] 70 00 06 00 00 00 00 52 00 00 00 00 5A 00
   3  0000A90B     1  05 00 00 00 00 00              CC     --   -----  00153

   4  0000A90B     1  03 00 00 00 0E 00             GOOD    --   -----  00153
                    [DATA] 70 00 06 00 00 00 00 52 00 00 00 00 28 00
   5  0000A90B     1  05 00 00 00 00 00             GOOD    --   -----  00153
                    [DATA] 00 80 00 00 00 01
   6  0000A90B     1  00 00 00 00 00 00             GOOD     8   -----  00153

   7  0000A916     1  00 00 00 00 00 00             GOOD    --   SYNC   00153

   8  0000A921     1  1B 00 00 00 01 00             GOOD    --   -----  00153

   9  0000A921     1  00 00 00 00 00 00             GOOD    --   -----  00153

  10  0000A921     1  1A 00 3F 00 80 00             GOOD    --   -----  00153
                    [DATA] 35 00 10 08 00 01 56 74 00 00 00 00 0F 0E C0 80
② →  < Q:quit/T:top/B:bottom/P:prev/other:next > ?
```

Description of display

Log Count : Number maintained by log (Max. 384)
No : Number inside the number maintained

① TIME : Time passed after GY-2120 activation (in hexadecimal and in units of 10 ms)
COUNT : Number of times when the identical command (the end status is also the same) was repeated
COMMAND LIST : Indicates the CDB of the SCSI command
[LEN] Indicates the length of the data actually sent in the data in/out phase
[DATA] Indicates the top of the data
STAT : Indicates the completion status
GOOD : Normal end
CC : check condition state
RESET : SCSI BUS RESET occurred
WIDE : WIDE negotiations were carried out
SYNC : Sync transfer negotiations were carried out
BOOT : Number of boots increased by one when GY-2120 is started

http://getMANUAL.com

② Description of key entry

P : Displays the previous log.

T : Displays the top log.

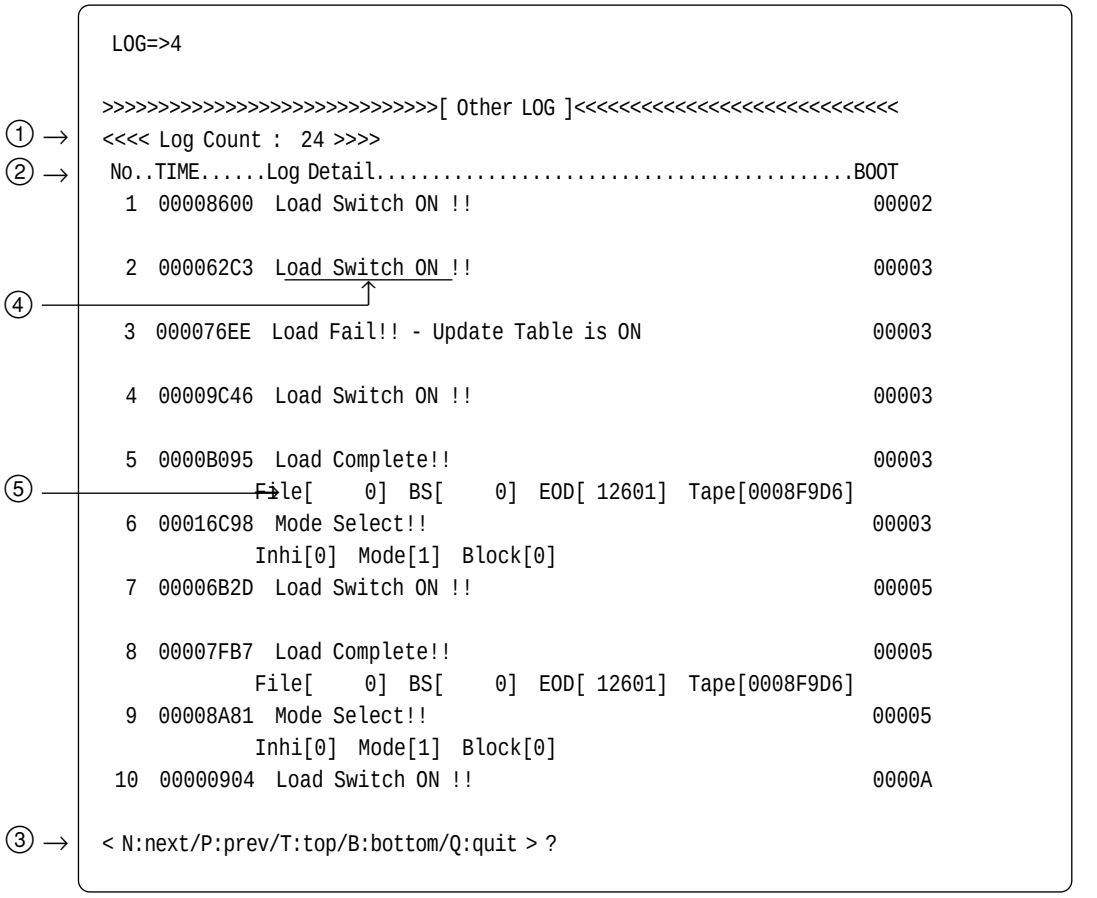
B : Displays the bottom log.

Q : Quits this log command.

For except the above, the following screen is displayed.

d) **Other History** (Log command No. 4)

Enter “4” as a command number and press the ENTER key.
Up to 64 histories of the internal operation state (system error generation and operation mode change) are displayed at that time.


LOG=>4
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>[Other LOG]<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
① →
<<<< Log Count : 24 >>>>
② →
No..TIME......Log Detail.....BOOT
1 00008600 Load Switch ON !! 00002
2 000062C3 Load Switch ON !! 00003
④
3 000076EE Load Fail!! - Update Table is ON 00003
4 00009C46 Load Switch ON !! 00003
5 0000B095 Load Complete!! 00003
⑤
File[0] BS[0] EOD[12601] Tape[0008F9D6]
6 00016C98 Mode Select!! 00003
Inhi[0] Mode[1] Block[0]
7 00006B2D Load Switch ON !! 00005
8 00007FB7 Load Complete!! 00005
File[0] BS[0] EOD[12601] Tape[0008F9D6]
9 00008A81 Mode Select!! 00005
Inhi[0] Mode[1] Block[0]
10 00000904 Load Switch ON !! 0000A
③ →
< N:next/P:prev/T:top/B:bottom/Q:quit > ?

Description of display

① Log Count : Number maintained by log (Max. 64)
No : Number inside the number maintained

② TIME : Time passed after GY-2120 activation (in hexadecimal and in units of 10 ms)
Log Detail : Indicates the history of changes of the error, tape format related operations, and operation mode (Refer to the table of log messages, log parameters)
BOOT : Number of boots increased by one when GY-2120 is started.

③ Description of key entry
P : Displays the previous log.
T : Displays the top log.
B : Displays the bottom log.
Q : Quits this log command.
For except the above, the following screen is displayed.

④ Log messages

Log Message	Contents
Controller Power Error!!	Detected power supply defect while GY-2120 was operating.
Copy!!	Executed the copy command.
Copy Fail!! - Error Code = xxxxxxxx	The copy command failed due to error.
Delete Partition complete!!	Completed erasing the partition.
Del Partition - Error Code = xxxxxxxx	Failed in erasing the partition due to error.
Drive Power Error!!	Detected power supply defect of GY-2120.
Drive System Error!!	System error occurred at GY-2120.
Error!! - Bad Tape (sb=xxxxxxxx/l= xxx)	Tape not managed by DTF sb → Data written in sub code 1 → Internal ID number in the bank
Error!! - Block Table Broken	Block management table was abnormal.
Error!! - Edac Multiple Error	Error was found in the buffer memory.
Error!! - FIT Overflow (cmd=xx)	The FIT (File Information Table) has overflowed. cmd → SCSI command when error occurred
Error!! - Framing Error	Error was found while writing from the buffer memory to the tape.
Error!! - Identify (sb=xxxxxxxx/l=xxx/r =xxxxxxxx)	Error was found in the subcode area. Sb → Data written in the sub code 1 → Internal ID number in the bank r → (Unnecessary)
Error!! - Parity Error	A parity error was found in the data in the buffer memory.
Error!! - Tape Full (cmd=xx)	Table has become full. cmd → SCSI command when the error occurred
Fast Load Complete!!	DIT data reading and first loading have completed.
Fast Load Fail!! - Error Code=xxxxxxxx	Failed in first loading due to error. Error Code → Displays the SCSI error code in 4 bytes
Fast Load Fail!! - Insert Virgin Tape	Uninitialized tape was inserted.
Fast Load Fail!! - SCSI Bus Reset	SCSI bus reset occurred during mounting.
Fast Load Fail!! - Update Table is ON	Tape which was not normally unmounted previously
Fast Unld complete!!	First loading completed normally.
Fast Unld Fail!! - Error Code=xxxxxxxxx	Failed in first loading due to error. Error Code → Displays the SCSI error code in 4 bytes
Format Complete!!	Completed tape initialization.
Format Fail!! - SCSI Bus Reset	SCSI bus reset occurred during tape initialization.
Format Fail!! - Error Code = xxxxxxxx	Failed in tape initialization due to error. Error Code → Displays the SCSI error code in 4 bytes
Load Complete!!	DIT data reading and mounting have completed.
Load Fail!! - Insert Virgin Tape	New tape was inserted.
Load Fail!! - SCSI Bus Reset	The SCSI BUS was reset during loading.
Load Fail!! - Update Table is ON	Tape which was not unloaded normally previously.
Load Fail!! - Error Code = xxxxxxxx	Failed in loading due to error. Error Code → Displays the SCSI error code in 4 bytes
Load Switch ON !!	The GY2120 UNLOAD button was pressed.
Maintenance Monitor Used	The maintenance mode was used.
Make DIT Fail!! - Error Code = xxxxxxxx	Could not create new volume due to error. Error Code → Displays the SCSI error code in 4 bytes
Make New DIT Complete!!	Created new DIT.

Log Message	Contents
Make Partition complete!!	Created a new volume.
Make Partition - Error Code = xxxxxxxx	Could not create new volume due to error. Error Code → Displays the SCSI error code in 4 bytes
Mode Select!!	The mode select value was changed.
Make VSIT Complete!!	Completed creating VSIT.
Make VSIT Fail!!- Error Code = xxxxxxxx	Failed to create VSIT due to error. Error Code → Displays the SCSI error code in 4 bytes
Read (2-port) Fail!!	The SYS CPU failed reading.
Read ULINF Complete!!	Confirmed reading of unload information data.
Read ULINF Fail!! - Error Code = xxxxxxxx	Could not confirm reading of ULINF data due to error. Error Code → Displays the SCSI error code in 4 bytes
Read VSIT Complete!!	Confirmed reading of VSIT data.
Read VSIT Fail!! - Error Code = xxxxxxxx	Could not confirm reading of VSIT data due to error. Error Code → Displays the SCSI error code in 4 bytes
Recover Switch ON !!	The GY-2120 RECOVER button was pressed.
Recover complete!!	Completed RECOVER.
Recover Fail!! - Error Code = xxxxxxx	Error Code → Displays the SCSI error code in 4 bytes
Search (2-port) Fail!!	Failed in PREROLL at the SYS CPU
Single Read (2-port) Fail!!	Failed in single read at the SYS CPU
Unload complete!!	Completed unmounting.
Unload Fail!! - Error Code = xxxxxxxx	Failed in unloading due to error. Error Code → Displays the SCSI error code in 4 bytes
Warning!! - Edac Corrected or Retry OK	1 bit error occurred at the memory, and it was corrected. Error above 2 bits occurred.
Warning!! - Parity Error Retry OK	Parity error occurred during data transfer between the PR and memory.
Write (2-port) Fail!!	The SYS CPU failed in writing.

⑤ Log parameters

Log Parameter	Contents
1’st Vol [XXXXXX-YYYYYY]	First volume range (Unit is ID)
ABN [XXXXXXXX]	Block number managed by DTF displayed in HEX
Address [XXXXXXXX]	ID number in the bank with error
Bank [XXXXX]	Bank number with error
Block [XXXX]	Block size value
Bod [XXXXXX]	Top of data of mounted volume. Unit is ID.
Bop [XXXXXX]	Top of the mounted volume. Unit is ID.
BS [XXXXXX]	Number of bad spots in the volume
C2ID [XXXXXX]	Position at which the error occurred. Unit is ID.
Cause1 [XX]	Internal I/O status of GY-2120 or error number of GY-2120 ∗
Cause2 [XX]	Internal I/O status in GY-2120 When ∗ “Drive Power Error!!, “Drive System Error!!”...Always 0
Cmnd [XXXXXXXX]	Error code from the SYS side CPU
Command [X]	Maintenance mode command
Derr [XXXXXXXX]	SYS side error code
DIT#1 [XXXXXX]	Top position of first volume. Unit is ID.
EOD [XXXXXX]	EOD position in the volume. Unit is ID.
Eop [XXXXXX]	Last position of mounted volume. Unit is ID.
FActMode [XXXXXXXX]	GY-2120 internal mode
FILE [XXXXXX]	Number of filemarks or set marks in the volume
fLoad [XXXXXXXX]	Internal load state of GY-2120
HOST [X]	Host SCSI ID
ID [XXXXXXX]	ID number in the bank read
Inhi [XXXX]	Recording-prohibited mode value
lEot [XXXXXX]	Last position of the tape. Unit is ID.
len [XXXXXXXX]	Block data length
Length [XXXXXXXX]	Memory address in the ID
Leot [XXXXXX]	EOT position of the tape. Unit is ID.
NumRecv [XXXXX]	Number of faults detected
Mode [XXXX]	Buffer mode value
OWC [XXXXXXXX]	Overwrite count for the volume
OWN [X]	GY-2120 SCSI ID
Rsv [XXXXXXXX]	(Always 0)
Scsi [XX]	SCSI command during error or execution
ScsiCmd [XX]	SCSI command executed
sync : X	Sync mode
Tape [XXXXXXXX]	Unique number of the tape
TAR (XXXXXXXX)[Y]	Targetted model name and SCSI ID
Tbl [XXXXXXX]	Block table managed by DTF. Displayed in HEX.
TopID [XXXXXX]	Position inside the bank with the error. Unit is ID.
VolCnt [XXX]	Number of volumes in the tape
VolNo. [XXX]	Targetted volume number
wide : X	Wide mode

e) **Serial Command Sequence** (Log command No. 5)

Enter “5” as a command number and press the ENTER key.
Displays the communication history of the RS-232C control command (Serial Command) by the OPTION terminal.
Up to 120 histories of the Serial command are displayed.

```
 LOG=>5

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>[ Other LOG ]<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
① →  <<<< Log Count :  120 >>>>
② →   No..TIME......COUNT..CMD......RECIEVE DATA...SEND DATA.............STAT
 001  06049ABE  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 002  0605A11D  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 003  0605A32B  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 004  0606A98B  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 005  0606AB99  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 006  0607B1F9  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 007  0607B406  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 008  0608BA66  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 009  0608BC74  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 010  0609C2D4  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 011  0609C4E1  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 012  060ACB41  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 013  060ACD4F  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 014  060BD3AF  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 015  060BD5BD  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 016  060CDC1C  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 017  060CDE2A  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 018  060DE48A  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
 019  060DE698  00127  EXTST    B7 06 00 BD    03 02 00 00 11 4C 6F 61  OK
 020  060EECF8  00001  HOURS    B1 06 00 B7    00 00 01 F3 00 00 00 90  OK
③ →  < N:next/P:prev/T:top/B:bottom/Q:quit > ?
```

Description of display

① Log Count : Number maintained by log (Max. 120)
② No : Number inside the number maintained
TIME : Time passed since the GY-2120 was started (Hexadecimal display, unit of 10 ms)
COUNT : Number of times the same command was repeated (same as completed status)
CMD : Abbreviation of command received
EXTST : GET EXTENDED STATUS (command : b7h)
HOURS : GET HOURS METERS (command : b1h)
CHGCD : CHANGE CONDITION (command : b5h)
INQ : INQUIRY (command : 12h)
RQSNS : REQUEST SENSE (command : 03h)

RECEIVE DATA : 4 byte data after received command STX.
SEND DATA : Outputs the transmitted data up to 8 bytes.
However, in the case of REQUEST SENSE, outputs 8 byte data consisting of the sense key, detailed sense code, detailed classification code, POWER+AUTOFRM+WP+LOAD, 0x0f (Fixed), TAPE+TAPREQ+ cassette type, 0x00 (Fixed), 0x00 (Fixed).
STAT : Status of command executed.
OK
NAK
NG
BUSY
???

③ Description of key inputs
P : Displays the previous screen
T : Displays the top log
B : Displays the last log
Q : Ends the log command
All others display the next screen.

f) **Bus Error Counter** (Log command No. 97)

Input the command number (97) and press the ENTER key.
Displays the operating status of the internal data bus.
If the count value is 0, an error is displayed.

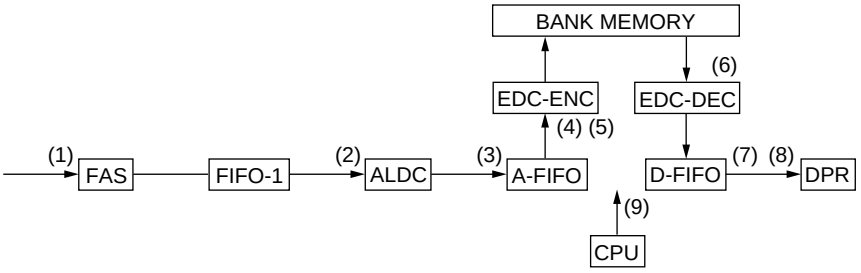
```
LOG => 97

+=============================================================+
|                     BUS Error Counter                       |
|=============================+===============================|
|         << WRITE >>         |          << READ >>           |
|-----------------------------+-------------------------------|
|SCSI PARITY ERROR(Hex)|00000000|FAS  PARITY ERROR(Hex)|00000000|
|-----------------------------+-------------------------------|
|ALDC PARITY ERROR(Hex)|00000000|ALDC PARITY ERROR(Hex)|00000000|
|-----------------------------+-------------------------------|
|PARITY-0 ERROR  (Hex)|00000000|PARITY-2 ERROR  (Hex)|00000000|
|-----------------------------+-------------------------------|
|PARITY-1 ERROR  (Hex)|00000000|FEDC-1 ERROR    (Hex)|00000000|
|-----------------------------+-------------------------------|
|FEDC-0 ERROR    (Hex)|00000000|CEDC-1 WARNNING  (Hex)|00000000|
|-----------------------------+-------------------------------|
|CEDC-0 WARNNING  (Hex)|00000000|PARITY-5 ERROR  (Hex)|00000000|
|-----------------------------+-------------------------------|
|FEDC-3 ERROR    (Hex)|00000000|FRAMMING-2 ERROR (Hex)|00000000|
|-----------------------------+-------------------------------|
|CEDC-3 WARNNING  (Hex)|00000000|PARITY-4 ERROR  (Hex)|00000000|
|-----------------------------+-------------------------------|
|PARITY-3 ERROR  (Hex)|00000000|FRAMMING-1 ERROR (Hex)|00000000|
|-----------------------------+-------------------------------|
|FRAMMING-0 ERROR (Hex)|00000000|                    |       |
|-----------------------------+-------------------------------|
|PARITY-D ERROR  (Hex)|00000000|                    |       |
|-----------------------------+-------------------------------|
|FEDC-2 ERROR    (Hex)|00000000|FEDC-2 ERROR    (Hex)|00000000|
|-----------------------------+-------------------------------|
|CEDC-2 WARNNING  (Hex)|00000000|CEDC-2 WARNNING  (Hex)|00000000|
+=============================================================+
```

- The 97 BUS ERROR COUNTER is the data bus error counter value.
  (Initialized by clear)

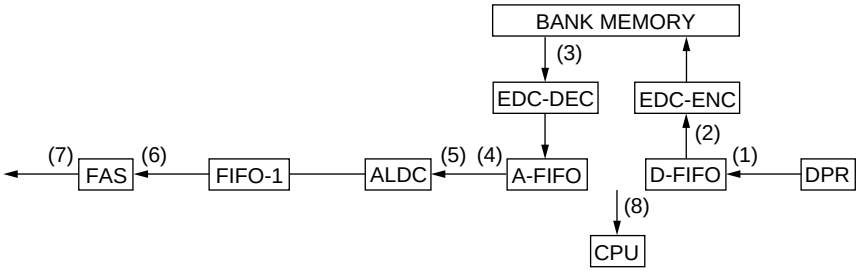
The points to be checked are as follows.

<< WRITE >>



(1) SCSI parity error
(2) ALDC parity error
(3) PARITY -0 error
(4) PARITY -1 error
(5) FEDC-0 error/CEDC-0 warning (Read after Write)
(6) FEDC-3 error/CEDC-3 warning
(7) PARITY-3 error/FRAM-0 error
(8) PARITY-D error
(9) FEDC-2 error/CEDC-2 warning

<< READ >>



(1)PARITY-4 error/FRAM-1 error
(2)PARITY-5 error/FRAM-2 error
(3) FEDC-1 error/CEDC-1 warning
(4) PARITY-2 error
(5) ALDC parity error
(6) FAS parity error
(7) SCSI parity error (host computer)
(8) FEDC-2 error/CEDC-2 warning

g) **Media Error Counter** (Log command No. 98)

Enter “98” after MDRV and press the ENTER key.
The counter value for returning using the LOG SENSE command is displayed.

(Initialization is carried out by LOG SENSE specifications)
- When the power is turned ON
- When LOAD is completed
- When SCSI BUS RESET
- During initialization by the LOG SELECT command

```
LOG => 98

+=============================================================+
|                    MEDIA Error Counter                      |
|=============================+===============================|
|         << WRITE >>         |          << READ >>           |
|-----------------------------+-------------------------------|
|C2 Error backup  *(Hex)|00001E78|C2 Error backup   *(Hex)|00000241|
|-----------------------------+-------------------------------|
|C2 Retry Num    (Hex)|00000000|C2 Retry Num    (Hex)|000005F7|
|-----------------------------+-------------------------------|
|Ecc MBytes      (Hex)|00000000|Ecc MBytes      (Hex)|00000000|
|-----------------------------+-------------------------------|
|Ecc Bytes       (Hex)|00000008|Ecc Bytes       (Hex)|000000A1|
|-----------------------------+-------------------------------|
|Process MBytes  (Hex)|0000001F|Process MBytes  (Hex)|000000A2|
|-----------------------------+-------------------------------|
|Process Bytes   (Hex)|00040C80|Process Bytes   (Hex)|0002E570|
|-----------------------------+-------------------------------|
|C2 Retry Over   (Hex)|00000000|C2 Retry Over   (Hex)|00000000|
|-----------------------------+-------------------------------|
|C1 Random (Ach) (Hex)|00000001|C1 Random (Ach) (Hex)|00000013|
|-----------------------------+-------------------------------|
|C1 Random (Bch) (Hex)|00000002|C1 Random (Bch) (Hex)|0000003E|
|-----------------------------+-------------------------------|
|C1 Random (Cch) (Hex)|00000001|C1 Random (Cch) (Hex)|0000002E|
|-----------------------------+-------------------------------|
|C1 Random (Dch) (Hex)|00000004|C1 Random (Dch) (Hex)|0000000A|
|-----------------------------+-------------------------------|
|C1 Burst (Ach)  (Hex)|00000000|C1 Burst (Ach)  (Hex)|00000000|
|-----------------------------+-------------------------------|
|C1 Burst (Bch)  (Hex)|00000000|C1 Burst (Bch)  (Hex)|00000000|
|-----------------------------+-------------------------------|
|C1 Burst (Cch)  (Hex)|00000000|C1 Burst (Cch)  (Hex)|00000004|
|-----------------------------+-------------------------------|
|C1 Burst (Dch)  (Hex)|00000000|C1 Burst (Dch)  (Hex)|00000000|
|-----------------------------+-------------------------------|
|C2 Error        (Hex)|00000000|C2 Error        (Hex)|00000000|
+=============================+===============================+
```

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C2 Error backup: (Hex, ID)

Same as the C2 Error, but the multiplied value which is backed up until cleared.

C2 Retry Num: (Hex, ID)

Multiplied value of retried IDs by detecting the C2 error.

As several IDs are retried together, they are multiplied if IDs without the C2 error are included in the retry.

Ecc Mbytes: (Hex, Mbytes)

Ecc Bytes: (Hex, Bytes)

Multiplied value of bytes of the data determined as requiring correction.

=Ecc Mbytes × 1024 × 1024 + Ecc Bytes

=C1 Random (total of all channels) + C1 Burst (total of all channels) × 6

As the number of bytes to be corrected is determined from the number of blocks of the C1 burst, calculations are carried out presuming that the minimum number of bytes (6 bytes) were corrected.

Process Mbytes: (Hex, Mbytes)

Process Mbytes: (Hex, Bytes)

Multiplied value of bytes of the processed data.

=Process Mbytes × 1024 × 1024 + Process Bytes

=Processed number of IDs × 117040

Value calculated by subtracting added data such as parity data from the number of bytes in 1 ID and presuming that the number of effective bytes is 117040 bytes.

C2 Retry Over: (Hex, ID)

Multiplied IDs exceeding the number of specified retries by detecting the C2 error.

As several IDs are retried together, IDs without the C2 error included in the retry are also multiplied.

C1 Random: (Hex, Byte)

Multiplied value of bytes corrected by the C1 decoder for the data read by each channel (Confi Data during write).

As the C1 decoder is efficient in correcting errors which occur randomly, C1 Random serves as the index for the Random Error occurring in each channel.

As both the data not requiring corrections and data which cannot be corrected are not counted, the error state is determined by using also the C1 burst.

C1 Burst: (Hex, Block)

Multiplied value of bytes corrected by the C1 decoder for the data read by each channel (Confi Data during write).

Although the C1 decoder corrects with 208 byte as one block, it cannot correct for errors where there are more than 5 bytes in one block. Consequently, the C1 burst serves as an index for the burst error which occurs in each channel.

Blocks which could not be corrected by the C1 decoder are done so by the C2 decoder.

C2 error: (HEX, ID)

Multiplied value of IDs which could not be corrected by the C2 decoder.
The C2 decoder synthesizes the data of Ach, Bch, Cch, and Dch processed by the C1 decoder.
If the data cannot be corrected by the C2 decoder, retry, etc. are performed.

- Parameters other than C2 Error backup are initialized (cleared to 0) in the following cases.
  - When the power is turned ON
  - When SCSI is reset
  - When loading of the tape completes
  - When initialization by the Log select command is specified
- The C2 Error backup is initialized (cleared to 0) at LOG MENU clear: Clear log.

6-2-3. Download Mode

This mode is used to download the firmware of the GY-2120.
Normally, downloading is carried out by a special tool. (Refer to Section 1-13.)

The download mode is activated when three characters “FDL” are entered from the PC in a capital letter. Message “DOWNLOAD=>” is then displayed as prompt. Entered a command number (or command) after this prompt and press the ENTER key. The command function is executed at that time.
Enter “QUIT” after this prompt and press the ENTER key. The download mode is then terminated.

Note

The download mode cannot be activated from another mode. Terminate another mode, then enter “FDL”.

Help command

In the download mode, there is a help command that displays the function list in this mode. To execute this help command, enter a command and press the ENTER key.

```
DOWNLOAD=>help

+===[ FIRMWARE DOWNLOAD ]=================================================+
 |                                                                        |
 | quit: Quit Tool         help: display help Menu                        |
 |                                                                        |
 | 1: SCSI CPU   2: SYS CPU   3: SV CPU   4: IF CPU   99: Download Tape   |
 |                                                                        |
 |                                  Coryright (c) 1995 1998, SONY Corp. |
+========================================================================+

 DOWNLOAD=>
```

Function List Display in Download Mode using Help Command

Note

A command that is available in the terminal emulator software of the PC can be used to send all data in one file to the RS-232C port. For more details, refer to the manual of the terminal emulator software.

a) Download into SCSI CPU (Download command No. 1)

Downloads all the firmware of a SCSI CPU into memory via RS-232C port and writes it in flash memory.

b) Download into SYS CPU (Download command No. 2)

Downloads all the firmware of a SYS CPU into memory via RS-232C port and writes it in flash memory.

c) Download into SV CPU (Download command No. 3)

Downloads all the firmware of a SV CPU into memory via RS-232C port and writes it in flash memory.

d) Download into IF CPU (Download command No. 4)

Downloads all the firmware of a IF CPU into memory via RS-232C port and writes it in flash memory.

e) Downloads from the tape (Download command No. 99)

Reads the firmware from the download tape written with the CPU firmware and writes in the flash memory. (Refer to Appendix A)

6-2-4. Vendor Information Set Mode

This mode is used to set each vendor information.

The vendor information set mode is activated when “CUSTOM” are entered from the PC in a capital letter. Message “CUSTOM=>” is then displayed as prompt. Entered a command number (or command) after this prompt and press the ENTER key. The command function is executed at that time.
Enter “QUIT” after this prompt and press the ENTER key. The vendor information set mode is then terminated.

Note

The vendor information set mode cannot be activated from another mode. Terminate another mode, then enter “CUSTOM”.

Help command

In the vendor information set mode, there is a help command that displays the function list in this mode. To execute this help command, enter a command and press the ENTER key.

```
CUSTOM=>help

 +===[ CUSTOM SET MENU ]=====================================================+
 |                                                                           |
 |    quit: Quit Tool     help: display help Menu                            |
 |                                                                           |
 |    1:Vendor Info Set    2:Vendor Info Display                             |
 |                                                                           |
 |                                  Copryright (c) 19   19**, SONY Corp.     |
 +===========================================================================+

 CUSTOM=>
```

Function List Display in Vendor Information Set Mode using Help Command

a) **Vendor Information Setting** (Vendor command No. 1)

Note

After the set vender information is input, do not turn off the power until the “CUSTOM=>” promrt is displayed.

Enter “1” as a command number and press the ENTER key.

1. The current vendor name (example: xxxxxxxx) that has been registered is displayed.
   Enter the vendor name (not exceeding eight characters) and press the ENTER key.
2. The current vendor ROM version (example: xxxx) that has been registered is displayed.
   Enter the vendor ROM version (not exceeding four characters) and press the ENTER key.
3. The current machine name (example: xxxxxxxxxxxxxxxx) that has been registered is displayed.
   Enter the machine name (not exceeding 16 characters) and press the ENTER key.
4. The setting data is written in the flash memory.
   The message shown in the following example is displayed on the screen.
   Now, Flash Memory Programming
   Wait a second!.... Finished.
   Never turn off the power of GY-2120 until the “CUSTOM=>” prompt is displayed again.
   “ROM Writing...” is also displayed at the LCD when writing in the flash memory. Never turn off the power of GY-2120 while this message is being displayed.

```
CUSTOM=>1

 Vendor Name (Char[8] default “xxxxxxxx”)          =>yyyyyyyy
 Vendor ROM Version (Char[4] default “xxxx”)        =>yyyy
 Machine Name (Char[16] default “xxxxxxxxxxxxxxxx”) =>yyyyyyyyyyyyyyyy
 Now, Flash Memory Programming
 Wait a second!....Finished.

 CUSTOM=>
```

b) **Vendor Information Display** (Vendor command No. 2)

Enter “2” as a command number and press the ENTER key.
The vendor name, vendor ROM version, and machine name are displayed at that time.

```
 CUSTOM=>2

 +=[ Setup menu ]============================================================+
 | Vendor Name         : [xxxxxxxx]                                          |
 | Vendor ROM Version  : [xxxx]                                              |
 | Machine Name        : [xxxxxxxxxxxxxxxx]                                  |
 +===========================================================================+

 CUSTOM=>
```

6-2-5. Service Set Mode

This mode is used to set the baud rate of RS-232C.

The service set mode is activated when “SERV” are entered from the PC in a capital letter. Message “SERV=>” is then displayed as prompt. Entered a command number (or command) after this prompt and press the ENTER key. The command function is executed at that time.
Enter “QUIT” after this prompt and press the ENTER key. The service set mode is then terminated.

Note

- The service set mode cannot be activated from another mode. Terminate another mode, then enter “SERV”.
- Setting by the service set mode is effective after re-starting the GY-2120. So after setting, turn off and on the power of GY-2120.

Help command

In the service set mode, there is a help command that displays the function list in this mode. To execute this help command, enter a command and press the ENTER key.

```
SERV=>help

+===[ SERVICE MENU ]=========================================================+
 |                                                                           |
 | quit: Quit Tool                    help: display help Menu                |
 |                                                                           |
 |   1: Display Service Values            2: Set All Service Values          |
 |                                                                           |
 | << DISPLAY SERVICE VALUES >>        << SET SERVICE VALUES >>              |
 |   11: Display Baud Rate               21: Set Baud Rate                   |
 |  13: Display Ignore Wide Residue Mode  23: Set Ignore Wide Residue Mode    |
 |   14: Display BT bit Ignore Mode       24: Set BT bit Ignore Mode         |
 |   15: Display REW bit Mode             25: Set REW bit Mode               |
 |                                                                           |
 |   71: Display PetaServe Mode           81: Set PetaServe Mode             |
 |   72: Display A-A Mode                 82: Set A-A Mode                   |
 |   73: Display COMP SW Mode             83: Set COMP SW Mode               |
 |                                                                           |
 |                                Copyright (c) 19    19** , SONY Corp.      |
+=============================================================================+
SERV=>
```

Note

If a tape is loaded, the following menu is not appeared on the display to prevent the values from changing by mistake.
2 : Set All Service Values
21 : Set Baud Rate
23 : Set Ignore Wide Residue Mode
24 : Set BT bit Ignore Mode
25 : Set REW bit Mode
81 : Set PetaServe Mode
82 : Set A-A Mode
83 : Set COMP SW Mode

If either switches, S202-1 or S202-2 on the IF-682/683 boards, is set to on, the following menu is not appeared on the SERV help.
71 : Display PetaServe Mode
72 : Display A-A Mode
81 : Set PetaServe Mode
82 : Set A-A Mode

Setting Display

a) **Display Baud Rate** (Service setting command No. 11)

Enter “11” as a command and press the ENTER key.
The setting of baud rate is displayed as shown below. (Default: 38400 bps)

```
SERV => 11
Baud Rate         : [4] 38400bps

SERV =>
```

b) **Display Ignore Wide Residue Mode** (Service setting command No. 13)

Enter “13” as a command and press the ENTER key.
The setting of Ignore Wide Residue Mode is displayed as shown below. (Default: ON)

When this mode is set to ON and the transmission data byte is less than the width of data bus at the wide transferring, the target reports “Ignore Wide Residue” message.
When this mode is set to OFF, the message is not reported.

```
SERV => 13
Ignore Wide Residue Message Mode      : [1] Report-ON

SERV =>
```

c) **Display BT bit Ignore Mode** (Service setting command No. 14)

Enter “14” as a command and press the ENTER key.
The setting of BT bit Ignore Mode is displayed as shown below. (Default: OFF)

When this mode is set to ON, BT bit of LOCATE/READ POSITION command is ignored. Then, GY-2120 transmits the logic block address as defined in SCSI standard regardless of the BT bit values.
When this mode is set to OFF and BT bit of LOCATE/READ POSITION command is “1”, GY-2120 responds CHECK CONDITION.

```
SERV => 14
BT bit Ignore Mode  : [0] Check [OFF]

SERV =>
```

d) **Display REW bit Mode** (Service setting command No. 15)

Enter “15” as a command and press the ENTER key.
The current REW bit Mode setting will be displayed. (Default: OFF)

When this mode is ON, the REW bit default value of the MODE SENSE/MODE SELECT device configuration page (when the power is turned on) is set to 1.

When this mode is OFF, the REW bit default value of the MODE SENSE/MODE SELECT device configuration page (when the power is turned on) is set to 0.

```
SERV => 15
Report Early Warning Mode   : [0] REW [OFF]

SERV =>
```

e) **Display PetaServe Mode** (Service setting command No. 71)

Enter “71” as a command and press the ENTER key.
The current PetaServe Mode setting will be displayed. (Default: OFF)

When this mode is ON, the following two SCSI command specifications will differ from the standard GY-2120 specifications.

[1] Locate (2BH) command
When the CDB byte 1 bit 0 (immediate bit) is “0”, actual locate operations are performed.
(Standard specifications:Only the logical pointer moves)

[2] Read Position (34H) command
When the CDB byte 1 bit 4 is “1”, the tape physical position (ID) is returned to the initiator.
(Standard specifications:CC:Illegal Request when the CDB byte 1 bit 4 is “1”.)

When this mode is OFF, the standard specifications are set.

```
SERV => 71
PetaServe Mode   : [0] OFF

SERV =>
```

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f) **Display A-A Mode** (Service setting command No. 72)

Enter “72” as a command and press the ENTER key.
The current A-A Mode setting will be displayed. (Default: OFF)

When this mode is ON, Early Warning (sense key/ASC/ASCQ=00/00/00, EOM bit=1) will not be reported in the following cases for the Near EOP area.

Early Warning is also not reported when the approximately 3000 ID area in front of the LEOP (Logical End of Partition) is defined as the NEOP (Near End of Partition), and the following are performed for the NEOP area.

1) Data is written by the Write command
2) Filemark is written by the Write Filemarks command
3) The pointer is moved by the Space and Locate commands

```
SERV => 72
A-A Mode        : [0] OFF

SERV =>
```

g) **Display COMP SW Mode** (Service setting command No. 73)

Enter “73” as a command and press the ENTER key.
The current COMP SW Mode setting will be displayed. (Default: OFF)

When the mode is ON, priority will be given to the setting of the COMP switch on the front panel for the setting of the compression/non-compression mode during recording.
(For details, refer to “2-5. Data Compression” of the protocol manual.)

```
SERV => 73
COMP SW Mode        : [0] OFF

SERV =>
```

h) **Display Service Values** (Service setting command No. 1)

Enter “1” as a command and press the ENTER key.
The setting values are listed up as shown below.

```
SERV => 1

##########[ SERVICE VALUES DISPLAY ]############################
|  Baud Rate           | [4] 4800bps                          |
|  Ignore Wide Msg Mode | [1] Report-ON                       |
|  BT bit ignore Mode   | [0] Check [OFF]                     |
|  REW bit Mode         | [0] OFF                             |
|  PetaServe Mode       | [0] OFF                             |
|  A-A Mode            | [0] OFF                              |
|  COMP SW Mode         | [0] OFF                             |
+----------------------+-------------------------------------+
SERV =>
```

Setting input

Note

After setting, don't turn the power off till "SERV=>" prompt is displayed.
"ROM Writing..." will also be displayed on the display of the front panel while data is written to the flash ROM.
Never turn off the power of GY-2120 while this is displayed.

a) Baud Rate Setting (Service setting command No.21)

Enter "21" as a command and press the ENTER key.
Enter a number (0 through 4) to set the baud rate and press the ENTER key.

```
SERV => 21

 Serial Baud Rate (default 4)
 [0:2400bps/1:4800bps/2:9600bps/3:19200bps/4:38400bps] = 0
 BAUD RATE => 4

 SERV =>
```

Note

The baud rate set at that time is valid only when the power of GY-2120 is turned on with SETUP switch 8 on the rear panel set to ON. (The baud rate is set to 9600 bps when the power of GY-2120 is turned on with SETUP switch 8 set to OFF.)

b) Ignore Wide Residue Message Setting (Service setting command No. 23)

Enter "23" as a command and press the ENTER key.
Enter 0 or 1 to set the mode of Ignore Wide Residue Message and press the ENTER key.

```
SERV => 23
Ignore Wide Residue Message Mode (default Report-ON) = Report-OFF
[0:OFF/other(digit):ON] => 1

SERV =>
```

c) **BT bit Ignore Mode Setting** (Service setting command No. 24)

Enter “24” as a command and press the ENTER key.
Enter 0 or 1 to set the mode of BT Bit Ignore and press the ENTER key.

```
SERV => 24
BT Bit Ignore Mode (default OFF) = Check [ON]
[0:OFF/other(digit):ON] => 0

SERV =>
```

d) **REW bit Mode Setting** (Service setting command No. 25)

Enter “25” as a command and press the ENTER key.
Enter 0 or 1 to set the mode of REW bit Mode and press the ENTER key.

```
SERV => 25
Report Early Warning Mode (default OFF) = REW [OFF]
[0:OFF/other(digit):ON] => 1

SERV =>
```

e) **PetaServe Mode Setting** (Service setting command No. 81)

Enter “81” as a command and press the ENTER key.
Enter 0 or 1 to set the mode of ModePetaServe Mode, and press the ENTER key.

```
SERV => 81
PetaServe Mode (default OFF) = OFF
[0:OFF/other(digit):ON] => 1

SERV =>
```

f) **A-A Mode Setting** (Service setting command No. 82)

Enter “82” as a command and press the ENTER key.
Enter 0 or 1 to set the mode of A-A Mode, and press the ENTER key.

```
SERV => 82
  A-A Mode (default OFF) = OFF
    [0:OFF/other(digit):ON] => 1

SERV =>
```

g) **COMP SW Setting** (Service setting command No. 83)

Enter “83” as a command and press the ENTER key.
Enter 0 or 1 to set the mode of COMP SW Mode, and press the ENTER key.

```
SERV => 83
COMP SW Mode (default OFF) = OFF
[0:OFF/other(digit):ON] => 1
Now, Flash Memory Programming.
Wait a second!....Finished.

SERV =>
```

h) **Continuous Setting** (Service setting command No. 2)

Enter “2” as a command and press the ENTER key.
Set the command numbers 21, 23 and 24 continuously.

```
SERV => 2

Serial Baud Rate (default 4)
[0:2400bps/1:4800bps/2:9600bps/3:19200bps/4:38400bps] = 4
BAUD RATE => 1

Ignore Wide Residue Message Mode (default Report-ON) = Report-ON
[0:OFF/other(digit):ON] => 1

BT Bit Ignore Mode (default OFF) = Check [OFF]
[0:OFF/other(digit):ON] => 1

Report Early Warning (default OFF) = REW [OFF]
[0:OFF/other(digit):ON] => 1

PetaServo Mode (default OFF) = OFF
[0:OFF/other(digit):ON] => 1

A-A Mode (default OFF) = OFF
[0:OFF/other(digit):ON] => 1

COMP SW Mode (default OFF) = OFF
[0:OFF/other(digit):ON] => 1

SERV =>
```

6-2-6. Drive Maintenance (MDRV) Mode

This mode is used to check and adjust the drive of the GY-2120.

The service set mode is activated by inputting four characters “MDRV” from a PC. “MDRV=>” is then displayed as a prompt. Enter a command number (or command) after this prompt and press the ENTER key. The command function is executed at that time. To terminate the service set mode, enter “QUIT” after this prompt and press the ENTER key.

Note

The service set mode cannot be activated from another mode. To enter the service set mode, terminate the current mode and enter “MDRV”.

Help command

The drive maintenance mode has a help command that lists the functions of this mode. To display the list, enter a command and press the ENTER key.

```
MDRV => help

+--<< GY-2120 Maintenance Menu >>-----------------------------------------+
|      quit: Quit Tool                                                     |
|      help: display help Menu                                             |
|                                                                          |
|      1. Remote Control(factory use only)                                 |
|      2. SV/RF Maintenance Mode                                           |
|                                                                          |
|     80. SYS/SV All Log Upload        81. MDRV All Log Upload             |
|     85. SV Log Upload                95. SV Log Display                  |
|     86. Base Mode Log Upload         96. Base Mode Log Display           |
|     87. Status Log Upload            97. Status Log Display              |
|     88. Time Code Log Upload         98. Time Code Log Display           |
|                                                                          |
|                                  Copyright (c) 19   19**, SONY Corp.     |
+--------------------------------------------------------------------------+

MDRV =>
```

a) Remote Control (factory use only) (Drive maintenance mode command No. 1)

Used for manufacturing. Unused.

b) SV/RF Maintenance Mode (Drive maintenance mode command No. 2)

This mode is used to adjust the servo and RF systems of the GY-2120.
To activate the SV/RF maintenance mode, enter command number "2" with "MDRV=>" displayed as the prompt of a PC. "- - - - - ->" is then displayed as the prompt.

Enter a command number (or command) after this prompt and press the ENTER key. The command function is then executed. To terminate the SV/RF maintenance mode, enter "QUIT" after this prompt and press the ENTER key.

Note

The SV/RF maintenance mode cannot be activated from another mode. To activate the SV/RF maintenance mode, terminate the current mode and enter "MDRV", then "2".

The commands used in the SV/RF maintenance mode are described on the 6-79 page.

c) SYS/SV All Log Upload (Drive maintenance mode command No. 80)

Enter "80" after MDRV, and press the ENTER key.
Function for uploading all SYS and SV logs to the PC.

d) MDRV All Log upload (Drive maintenance mode command number 81)

Enter "81" after MDRV, and press the ENTER key.
Function for uploading all SYS and SV logs, HOURS METER, and Abort Reason Code to the PC.

e) SV Log upload (Drive maintenance mode command number 85)
Enter "85" after MDRV, and press the ENTER key.
Function for uploading all SV logs to the PC.

f) Base Mode Log Upload (Drive maintenance mode command number 86)
Enter "86" after MDRV, and press the ENTER key.
Function for uploading all SYS logs to the PC.

g) Status Log Upload (Drive maintenance mode command number 87)
Enter "87" after MDRV, and press the ENTER key.
Function for uploading all SYS log to the PC.

h) Time Code Log Upload (Drive maintenance mode command number 88)
Enter "88" after MDRV, and press the ENTER key.
Function for uploading all logs indicating details of recording/playback by the SYS to the PC.

i) **SV Log Display** (Drive maintenance mode command No. 95)

Enter “95” after MDRV and press the ENTER key.
This function displays an SV log on the personal computer screen.
The SV log is automatically backed up when an error occurs in the servo system.

```
MDRV => 95

SV Logger Disp

Area No. = 00  Error Code = 05

Offset 0--------4--------8--------C--------10-------14-------18-------1C------
   00 02030576 00900200 0823023D 6B600132 010045A7 00FE02FE 088A0000 008B3A61
   20 13270303 7ADC1380 03000045 00440045 00450044 00120000 00000121 0046FF7D
   40 00000488 0480003C 00010488 0AF3E8A9 03A20003 0074E13A 00081AA2 1B0C1B0C
   60 1AAFFFFF 010200DA 00020330 00000100 00000000 00000000 00000000 00000000
   ------------------------------------------------------------------------

< Q:quit/T:top/B:bottom/P:prev/other:next > ?
```

Description of display

(1) Error Code : Indicates the error code generated when a log is displayed.
Area No : Indicates the log number.
Note
The log number with Area No = 0 is the latest one.

(2) Indicates the internal variable value of SV firmware when an error occurs.

(3) Description of key entry
P : Displays the previous log.
T : Displays the top log.
B : Displays the last log.
Q : Quits the log command.
Entering the keys other than described above displays the screen below.

j) **Base Mode Log Display** (Drive maintenance mode command No. 96)

Enter “96” after MDRV and press the ENTER key.
This function displays the SYS operation log on the personal computer screen.

```
MDRV => 96

Syscon Base Mode Logger Display

Logger mem pointer : Log No.   : bm br b1 ta kt ct ec es

log_rp = 000022F0  :  No = 01F3 : 09 90 00 05 61 00 00 00

log_rp = 000022F8  :  No = 01F4 : 07 90 00 05 61 00 00 00

log_rp = 00002300  :  No = 01F5 : 0C A0 00 05 61 00 00 00

log_rp = 00002308  :  No = 01F6 : 04 A0 00 05 61 00 00 00

log_rp = 00002310  :  No = 01F7 : 09 90 00 05 61 00 00 00

log_rp = 00002318  :  No = 01F8 : 07 90 00 05 61 00 00 00

log_rp = 00002320  :  No = 01F9 : 0C A0 00 05 61 00 00 00

log_rp = 00002328  :  No = 01FA : 04 A0 00 05 61 00 00 00

log_rp = 00002330  :  No = 01FB : 0C 88 00 05 61 00 00 00

log_rp = 00002338  :  No = 01FC : 0E 84 00 05 61 00 00 00

log_rp = 00002340  :  No = 01FD : 0E 82 00 05 61 00 00 00

log_rp = 00002348  :  No = 01FE : 01 02 00 05 61 00 00 00

< Q:quit/T:top/B:bottom/P:prev/other:next > ?
```

(1) Description of display

log_rp=00002348 : No=01FE : 01 02 00 05 61 00 00 00

Address of memory where ogs are stored	Log No.	Display of internal variable indicating the SYS firmware operation

(2) Description of key entry
P : Displays the previous log.
T : Displays the top log.
B : Displays the last log.
Q : Quits the log command.
Entering the keys other than described above displays the screen below.

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k) **Status Log Display** (Drive maintenance mode command No. 97)

Enter “97” after MDRV and press the ENTER key.
This function displays the SYS status log on the personal computer screen.

```
MDRV => 97

Syscon Status Mode Logger Display

Logger mem pointer :  Log No.   : status

log_rp = 00001FA0  :  No = 01EC : FF FF FF FF FF FF FF FF

log_rp = 00001FA8  :  No = 01ED : FF FF FF FF FF FF FF FF

log_rp = 00001FB0  :  No = 01EE : FF FF FF FF FF FF FF FF

log_rp = 00001FB8  :  No = 01EF : FF FF FF FF FF FF FF FF

log_rp = 00001FC0  :  No = 01F0 : FF FF FF FF FF FF FF FF

log_rp = 00001FC8  :  No = 01F1 : FF FF FF FF FF FF FF FF

log_rp = 00001FD0  :  No = 01F2 : FF FF FF FF FF FF FF FF

log_rp = 00001FD8  :  No = 01F3 : FF FF FF FF FF FF FF FF

log_rp = 00001FE0  :  No = 01F4 : FF FF FF FF FF FF FF FF

log_rp = 00001FE8  :  No = 01F5 : FF FF FF FF FF FF FF FF

log_rp = 00001FF0  :  No = 01F6 : FF FF FF FF FF FF FF FF

log_rp = 00001FF8  :  No = 01F7 : FF FF FF FF FF FF FF FF

< Q:quit/T:top/B:bottom/P:prev/other:next > ?
```

(1) Description of display

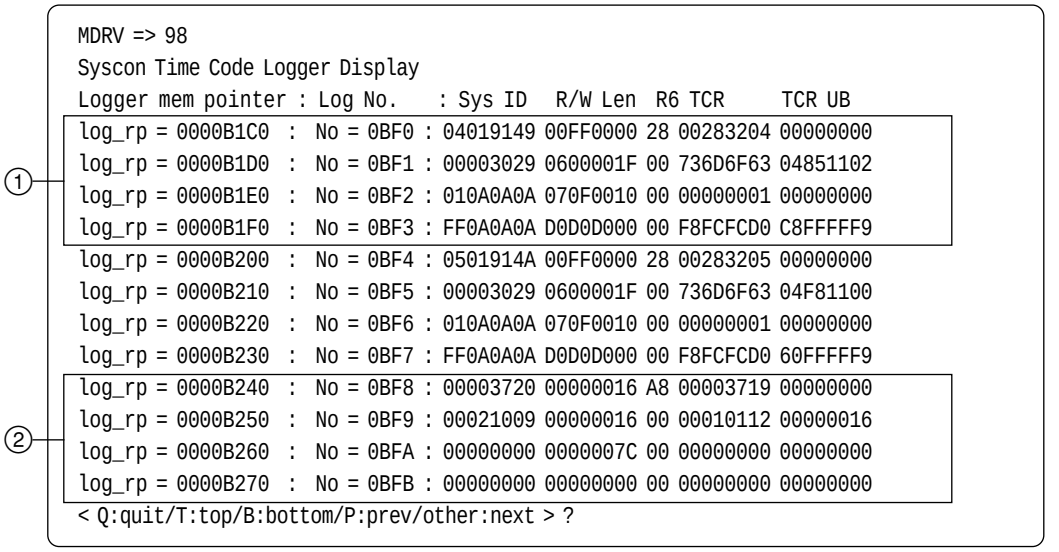
log_rp=00001FF8 : No=01F7 : FF FF FF FF FF FF FF FF

Address of memory where logs are stored	Log No.	Display of internal variable indicating the SYS firmware operation

(2) Description of key entry
P : Displays the previous log.
T : Displays the top log.
B : Displays the last log.
Q : Quits the log command.
Entering the keys other than described above displays the screen below.

l) **Time Code Log Display** (Drive maintenance mode command No. 98)

1) Log display example



```
MDRV => 98
Syscon Time Code Logger Display
Logger mem pointer : Log No.    : Sys ID   R/W Len  R6 TCR     TCR UB
log_rp = 0000B1C0  :  No = 0BF0 : 04019149 00FF0000 28 00283204 00000000
log_rp = 0000B1D0  :  No = 0BF1 : 00003029 0600001F 00 736D6F63 04851102
log_rp = 0000B1E0  :  No = 0BF2 : 010A0A0A 070F0010 00 00000001 00000000
log_rp = 0000B1F0  :  No = 0BF3 : FF0A0A0A D0D0D000 00 F8FCFCD0 C8FFFFF9
log_rp = 0000B200  :  No = 0BF4 : 0501914A 00FF0000 28 00283205 00000000
log_rp = 0000B210  :  No = 0BF5 : 00003029 0600001F 00 736D6F63 04F81100
log_rp = 0000B220  :  No = 0BF6 : 010A0A0A 070F0010 00 00000001 00000000
log_rp = 0000B230  :  No = 0BF7 : FF0A0A0A D0D0D000 00 F8FCFCD0 60FFFFF9
log_rp = 0000B240  :  No = 0BF8 : 00003720 00000016 A8 00003719 00000000
log_rp = 0000B250  :  No = 0BF9 : 00021009 00000016 00 00010112 00000016
log_rp = 0000B260  :  No = 0BFA : 00000000 0000007C 00 00000000 00000000
log_rp = 0000B270  :  No = 0BFB : 00000000 00000000 00 00000000 00000000
< Q:quit/T:top/B:bottom/P:prev/other:next > ?
```

① Read (01, 03)/Write (02) CMD
② Longitudinal search (19) CMD

2) Log structure

1 status with 4 lines.
Logs 1 status (1st to 4th line) is logged for 1 ID (9.6 ms).

Log No. No = xxx0 to xxx3	n ID status logging
Log No. No = xxx4 to xxx7	n+1 ID status logging
Log No. No = xxx8 to xxxB	n+2 ID status logging
Log No. No = xxxC to xxxF	n+3 ID status logging

3) Log type

There are two types of logs:

Read (01, 03)/Write (02) CMD (LOG display example ①)
Longitudinal search (19) CMD (LOG display example ②)

How to differentiate

Statuses where the data of lines Log No. No.=xxx3, xxx7, xxxB, and xxxF is 0 are longitudinal search (19) CMD logs.

Read (01, 03)/Write (02) CMD Log Example

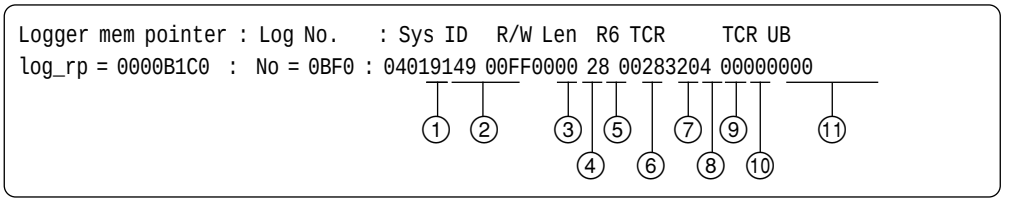
```
Logger mem pointer : Log No.   : Sys ID  R/W Len  R6 TCR     TCR UB
log_rp = 0000B1C0  :  No = 0BF0 : 04019149 00FF0000 28 00283204 00000000
log_rp = 0000B1D0  :  No = 0BF1 : 00003029 0600001F 00 736D6F63 04851102
log_rp = 0000B1E0  :  No = 0BF2 : 010A0A0A 070F0010 00 00000001 00000000
log_rp = 0000B1F0  :  No = 0BF3 : FF0A0A0A D0D0D000 00 F8FCFCD0 C8FFFFF9
```

Longitudinal search (19) CMD Log Example

```
Logger mem pointer : Log No.   : Sys ID  R/W Len  R6 TCR     TCR UB
log_rp = 0000B240  :  No = 0BF8 : 00003720 00000016 A8 00003719 00000000
log_rp = 0000B250  :  No = 0BF9 : 00021009 00000016 00 00010112 00000016
log_rp = 0000B260  :  No = 0BFA : 00000000 0000007C 00 00000000 00000000
log_rp = 0000B270  :  No = 0BFB : 00000000 00000000 00 00000000 00000000
```

4) Read (01, 03)/Write (02) CMD

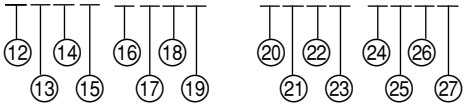
1st line (Log No. No.=xxx0, xxx4, xxx8, xxxC lines)


Logger mem pointer : Log No. : Sys ID R/W Len R6 TCR TCR UB
log_rp = 0000B1C0 : No = 0BF0 : 04019149 00FF0000 28 00283204 00000000
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

① : the_frame (BCD)
② : the_id (Hex ID)
③ : PB_ENV_LEVEL
④ : dram_cont_err_buf
⑤ : id_len_count (Hex ID)
⑥ : RD06
⑦ to ⑩ : READ_TIME (BCD Time Code)
⑪ : READ_UB

2nd line (Log No. No.=xxx1, xxx5, xxx9, xxxD lines)

```
Logger mem pointer : Log No.   : Sys ID  R/W Len  R6 TCR     TCR UB
log_rp = 0000B1D0  :  No = 0BF1 : 00003029 0600001F 00 736D6F63 04851102
```



⑫ : ERROR_CODE
⑬ : ABORT_CODE
⑭ : C_EQ_OUTPORT
⑮ : C_REC_CONTROL

⑯ : PORT_T
⑰ : PORT_0
⑱ : r_wr04
⑲ : r_wr02

Read (01, 03) CMD /Write (02) CMD
⑳ : EQDA17 (Dch.) /EQDA03 (Dch.)
㉑ : EQDA11 (Cch.) /EQDA02 (Cch.)
㉒ : EQDA16 (Bch.) /EQDA01 (Bch.)
㉓ : EQDA10 (Ach.) /EQDA00 (Ach.)

㉔ : C_SAT_FLAG
㉕ : DRAM_CONT_ADDL_DP
㉖ : DRAM_CONT_ADDM_DP
㉗ : DRAM_CONT_CONT_DP

3rd line (Log No. No.=xxx2, xxx6, xxxA, xxxE lines)

```
Logger mem pointer : Log No.   : Sys ID  R/W Len  R6 TCR     TCR UB
log_rp = 0000B1E0  :  No = 0BF2 : 010A0A0A 070F0010 00 00000001 00000000
                                  (28)(30)(32)(34)    (36)(38)(40)(42)
                                    (29)(31)(33)(35)    (37)(39)(41)(43)
```

㉘ : H_DPR_REG0_3 (EE/PB control)
㉙ : H_DPR_REG0_2 (C1 error correction ability (e+n))
㉚ : H_DPR_REG0_1 (C1 error correction ability (e))
㉛ : H_DPR_REG0_0 (C1 error correction ability (n))
㉜ : H_DPR_REG0_7 (IC test report (c1_enc))
㉝ : H_DPR_REG0_6 (IC test report (c1_dec))
㉞ : H_DPR_REG0_5 ((not used))
㉟ : H_DPR_REG0_4 (test mode control)
㊱ : H_DPR_REG0_B (C1 random error (Cch))
㊲ : H_DPR_REG0_A (C1 random error (Bch))
㊳ : H_DPR_REG0_9 (C1 random error (Ach))
㊴ : H_DPR_REG0_8 (C1 correction control)
㊵ : H_DPR_REG0_F (option mode DATA resistor)
㊶ : H_DPR_REG0_E (option mode ADDRESS resistor)
㊷ : H_DPR_REG0_D ((not used))
㊸ : H_DPR_REG0_C (C1 random error (Dch))

4th line (Log No. No.=xxx3, xxx7, xxxB, xxxF lines)

```
Logger mem pointer : Log No.   : Sys ID  R/W Len  R6 TCR     TCR UB
log_rp = 0000B1F0  :  No = 0BF3 : FF0A0A0A D0D0D000 00 F8FCFCD0 C8FFFFF9
                                  (44)(46)(48)(50)    (52)(54)(56)(58)
                                    (45)(47)(49)(51)    (53)(55)(57)(59)
```

㊹ : H_DPR_REG1_3 (erasure off/C2 dec control)
㊺ : H_DPR_REG1_2 (C2 error correction ability (e+n))
㊻ : H_DPR_REG1_1 (C2 error correction ability (e))
㊼ : H_DPR_REG1_0 (C2 error correction ability (n))
㊽ : H_DPR_REG1_7 (C1 burst error (Cch))
㊾ : H_DPR_REG1_6 (C1 burst error (Bch))
㊿ : H_DPR_REG1_5 (C1 burst error (Ach))
(51) : H_DPR_REG1_4 (REC_ENABLE/SAT ON/OFF control)
(52) : H_DPR_REG1_B (Mechanism adjustment signal generation control)
(53) : H_DPR_REG1_A (Mechanism adjustment REC ENABLE control)
(54) : H_DPR_REG1_9 (FM parity err)
(55) : H_DPR_REG1_8 (C1 burst error (Dch))
(56) : H_DPR_REG1_F (read exor data)
(57) : H_DPR_REG1_E (Processor test mode)
(58) : H_DPR_REG1_D (IC test report (c2 enc/dec))
(59) : H_DPR_REG1_C (IC test control (diag mode))

5) Longitudinal search (19) CMD

1st line (Log No. No.=xxx0, xxx4, xxx8, xxxC lines)

```
Logger mem pointer : Log No.    : Sys ID   R/W Len  R6 TCR     TCR UB
log_rp = 000B240  :  No = 0BF8  : 00003720 00000016 A8 00003719 00000000
                                  ①  ②  ③  ④     ⑤  ⑥  ⑦  ⑧  ⑨  ⑩  ⑪
```

① to ④ : V_LTCR (BCD Time Code)
⑤ : l_search_count (Hex Frame)
⑥ : RD06
⑦ to ⑩ : READ_TIME (BCD Time Code)
⑪ : READ_UB

2nd line (Log No. No.= xxx1, xxx5, xxx9, xxxD lines)

```
Logger mem pointer : Log No.    : Sys ID   R/W Len  R6 TCR     TCR UB
log_rp = 0000B250  :  No = 0BF9 : 00021009 00000016 00 00010112 00000016
                                  ⑫  ⑬  ⑭  ⑮     ⑯  ⑰  ⑱  ⑱  ⑳  ㉑
```

⑫ to ⑮ : C_CTL_COUNT (BCD Time Code)
⑯ : normal_ltc_count (Hex Frame)
⑰ to ⑳ : CTL
㉑ : normal_ctl_count (Hex Frame)

3rd line (Log No. No.=xxx2, xxx6, xxxA, xxxE lines)

```
Logger mem pointer : Log No.    : Sys ID   R/W Len  R6 TCR     TCR UB
log_rp = 0000B260  :  No = 0BFA : 00000000 0000007C 00 00000000 00000000
                                                    ㉒
```

㉒ : total_search_count (Hex Frame)

4th line (Log No. No.=xxx3, xxx7, xxxB, xxxF lines)

```
Logger mem pointer : Log No.    : Sys ID   R/W Len  R6 TCR     TCR UB
log_rp = 0000B270  :  No = 0BFB : 00000000 00000000 00 00000000 00000000
```

All 0

6) Details of LOG Items

List of LOG Items

• Read (01,03)/Write (02) CMD

No.	LOG Items	Page
1	the_frame (BCD,Frame)	6-69
2	the_id (Hex,ID)	6-69
3	PB_ENV_LEVEL	6-69
4	dram_cont_err_buf	6-69
5	id_len_count (Hex,ID)	6-70
6	RD06	6-70
7 to 10	READ_TIME (BCD,Time Code)	6-71
11	READ_UB	6-71
12	ERROR_CODE	6-71
13	ABORT_CODE	6-71
14	C_EQ_OUTPORT	6-71
15	C_REC_CONTROL	6-72
16	PORT_T	6-72
17	PORT_0	6-73
18	r_wr04	6-74
19	r_wr02	6-74
20	EQDA17 (Dch.) /EQDA03 (Dch.)	6-74
21	EQDA11 (Cch.) /EQDA02 (Cch.)	6-74
22	EQDA16 (Bch.) /EQDA01 (Bch.)	6-74
23	EQDA10 (Ach.) /EQDA00 (Ach.)	6-74
24	C_SAT_FLAG	6-74
25	DRAM_CONT_ADDL_DP	6-74
26	DRAM_CONT_ADDM_DP	6-74
27	DRAM_CONT_CONT_DP	6-75
28	H_DPR_REG0_3 (EE/PB control)	6-75
29	H_DPR_REG0_2 (C1 error correction ability (e+n))	6-75
30	H_DPR_REG0_1 (C1 error correction ability (e))	6-75
31	H_DPR_REG0_0 (C1 error correction ability (n))	6-75
32	H_DPR_REG0_7 (IC test report (c1_enc))	6-75
33	H_DPR_REG0_6 (IC test report (c1_dec))	6-75
34	H_DPR_REG0_5 ((not used))	6-75
35	H_DPR_REG0_4 (test mode control)	6-75
36	H_DPR_REG0_B (C1 random error (Cch))	6-75
37	H_DPR_REG0_A (C1 random error (Bch))	6-75
38	H_DPR_REG0_9 (C1 random error (Ach))	6-75
39	H_DPR_REG0_8 (C1 correction control)	6-76
40	H_DPR_REG0_F (option mode DATA resistor)	6-76
41	H_DPR_REG0_E (option mode ADDRESS resistor)	6-76

No.	LOG Items	Page
42	H_DPR_REG0_D ((not used))	6-76
43	H_DPR_REG0_C (C1 random error (Dch))	6-76
44	H_DPR_REG1_3 (erasure off/C2 dec control)	6-76
45	H_DPR_REG1_2 (C2 error correction ability (e+n))	6-76
46	H_DPR_REG1_1 (C2 error correction ability (e))	6-76
47	H_DPR_REG1_0 (C2 error correction ability (n))	6-76
48	H_DPR_REG1_7 (C1 burst error (Cch))	6-76
49	H_DPR_REG1_6 (C1 burst error (Bch))	6-76
50	H_DPR_REG1_5 (C1 burst error (Ach))	6-76
51	H_DPR_REG1_4 (REC_ENABLE/SAT ON/OFF control)	6-76
52	H_DPR_REG1_B (Mechanism adjustment signal generation control)	6-76
53	H_DPR_REG1_A (Mechanism adjustment REC ENABLE control)	6-76
54	H_DPR_REG1_9 (FM parity err)	6-76
55	H_DPR_REG1_8 (C1 burst error (Dch))	6-77
56	H_DPR_REG1_F (read exor data)	6-77
57	H_DPR_REG1_E (Processor test mode)	6-77
58	H_DPR_REG1_D (IC test report (c2 enc/dec))	6-77
59	H_DPR_REG1_C (IC test control (diag mode))	6-77

• Longitudinal search CMD

No.	LOG Items	Page
1 to 4	V_LTCR (BCD Time Code)	6-77
5	l_search_count (Hex Frame)	6-77
6	RD06	
7 to10	READ_TIME (BCD Time Code)	
11	READ_UB	
12 to 15	C_CTL_COUNT (BCD Time Code)	6-77
16	normal_ltc_count (Hex Frame)	6-78
17 to 20	CTL	6-78
21	normal_ctl_count (Hex Frame)	6-78
22	total_search_count (Hex Frame)	6-78

• Read (01, 03)/Write (02) CMD

① : the_frame (BCD, Frame)

To V1.07, Always 00

From V1.08
DRV Block Frame value
Corrected to enable comparison with READ_TIME.

② : the_id (Hex, ID)
DRV Block ID value
Corrected to enable comparison with READ_TIME.

③ : PB_ENV_LEVEL

RF Play Back Envelope Level
Indicates the levels of channels A, B, C, and D in four levels.

3 (Decimal) = (80 to 100%)
2 (Decimal) = (60 to 80% or less)
1 (Decimal) = (40 to 60% or less)
0 (Decimal) = (0 to 40% or less)

Example of when cc is FF

FF (Hexadecimal) = 11 11 11 11 (Binary)
Channels A, B, C, Dch

RF PB Envelope Level
A:Ach 11 (Binary) = 3 (Decimal) = (80 to 100%)
B:Bch 11 (Binary) = 3 (Decimal) = (80 to 100%)
C:Cch 11 (Binary) = 3 (Decimal) = (80 to 100%)
D:Dch 11 (Binary) = 3 (Decimal) = (80 to 100%)

④ : dram_cont_err_buf

To V1.07 not used
From V1.08

/* b7 : edc_ferr (FE-3) 1 : error exist 0: no error */
/* b6 : edc_cerr (CE-3) 1 : error exist 0: no error */
/* b5 : wfrmg_err (F-0) 0 : always (not used)*/
/* b4 : wprty_err (P-3) 1 : error exist 0: no error */
/* b3 : rfrmg_err1 (F-2) 0 : always (not used)*/
/* b2 : rprty_err1 (P-5) 1 : error exist 0: no error */
/* b1 : rfrmg_err0 (F-1) 0 : always (not used)*/
/* b0 : rprty_err0 (P-4) 1 : error exist 0: no error */

Normal 00

ⓢ : id_len_count (Hex, ID)
Downcount of ID number by write/read
As write is processed 3IDs ahead, the lines are jumped by 3IDs for READ_TIME and 0 is input for the last 3IDs.

33ID Read: 21, 20, 1F, ...04, 03, 02, 01

28ID Write: 19, 18, 17,..., 01, 00, 00, 00

ⓖ : RD06
TCG IC Read Flag -3

b7	b6	b5	b4	b3	b2	b1	b0
LTCR rev/fwd	EXT-in BER	EXT-in +2%	EXT-in −2%	LTCR OVF (=0)	LTCR DER	LTCR BER	LTCR interplt

∗ rev/fwd : 1: rev, 0: fwd
∗ interplt : Interpolating by CTL
∗ BER : BI-phase Error
∗ OVF : Overflow
∗ DER : Data Error

EXT-in is not used

	Write/Read	Longitudinal search	
		forward	reverse
Normal values	28	28	A8

Note)
Errors may occur near the Append Write positions in write and read.

Errors for longitudinal search occur during acceleration, etc.

http://getMANUAL.com

⑦ to ⑩ : READ_TIME (BCD, Time Code)

Absolute Time Code value at which LTC was read from the tape
Absolute Time Code value at which LTC was written on the tape

gg : hours
hh : minutes
ii : seconds
jj : Frames

⑪ : READ_UB
UB value read from the tape
UB value written on the tape

Normal value 00000000 (Because UB is not used)

⑫ : ERROR_CODE
System error code
The aa of 2xaa are recorded.

Normal value 00

⑬ : ABORT_CODE

Function Abort Reason Code :

---

o 00 = non_abort : no error
o 01 = eot_reach : EOT reached at FWD/REC
o 02 = park_bot : park at BOT, command direction wrong
o 03 = park_eot : park at EOT, command direction wrong
o 04 = rec_inhibit : REC inhibit when REC message received
o 05 = search_abort : search/preroll target point not found
(Aborted when not found after changes the search direction four times)
o 06 = incorrect_preroll : preroll length incorrect
(Should be more than 124 in front from the IN point for the “with IN” command)
o 07 = servo_unlock : servo not locked at PLAY/REC IN timing
o 08 = not_IN_set : IN-point is not set when “with IN” or Preroll command

Normal value 00

⑭ : C_EQ_OUTPORT

SYS->SV (Free Timing)
; (b7) H : REC LOCK
; (b6) L : REC MODE
; (b5) L : EQ-LP2
; (b4) L : EQ-LP1

	Write	Read
Normal value	30	F0

⑮ : C_REC_CONTROL

(b7) - (b4) REC MODE

0x : Finish SV->SYS
1x : Crash REC SYS->SV
2x : Edit REC, REC with IN SYS->SV
3x : (Not Used)
| |
Fx : (Not Used)

(b3) - (b0) REC STATE SYS->SV

x0 → x6 : REC START
x9 : REC STOP
xF : REC CANCEL
others : Nothing

	Write		Read
	Before stop	Others	
Normal value	29	26	00

⑯ : PORT_T

bit2 : Always 1
bit1 : Always 1

bit0 : 1 Unrecovered Error (C2 Error) Present
0 Unrecovered Error (C2 Error) Absent

	Present	Absent
Unrecovered Error (C2 Error)	07	06

The Unrecovered Error (C2 Error) is detected delayed by 3IDs during read and write. Consequently, it may be at 07 when 3ID from the IN point. Also, although the C2 error of the last 3IDs is detected, it is not recorded in the Time Code Log.

If cannot be corrected by C2 Error correction, as data cannot be recovered, this is called unrecoverd error.

	3ID area from IN point	Others
Normal value	06, 07	06

⑰ : PORT_0

To V1.07 Always 00

From V1.08

bit0 : TP601
1 : Even ID
0 : Odd ID

	the_id value	
	Odd	Even
Normal value	1	0

bit1 : TP602
Always 0 while recording in the Time Code Log

bit2 : DR_REC_ENABLE
0 : enable
1 : disable

	Odd	Even
Normal value	0	1

bit3 : SV_RESET
0 : enable
1 : disable

Normal value 1

bit4 : DPR_WR_RD (not used)
0 : WR
1 : RD

Normal value Unstable

bit5 : EQ_EE
0 : OFF
1 : ON

Normal value 0

bit6 : MODE (PRECODE)
0 : OFF
1 : ON

Normal value 1

bit7: clock out
(don't care)

		Read		Write	
		Even ID	Odd ID	Even ID	Odd ID
Normal value	4D,5D	4C,5C	49,59	48,58	

⑱ : r_wr04

	Write	Read
Normal value	00	17

⑲ : r_wr02

Normal value 1F

⑳ : EQDA17 (Dch. PB Gain) /EQDA03 (Dch. REC Gain)
㉑ : EQDA11 (Cch. PB Gain) /EQDA02 (Cch. REC Gain)
㉒ : EQDA16 (Bch. PB Gain) /EQDA01 (Bch. REC Gain)
㉓ : EQDA10 (Ach. PB Gain) /EQDA00 (Ach. REC Gain)

EQ PB/REC Gain of each channel

Read (01,03) CMD PB Gain
Write (02) CMD REC Gain

㉔ : C_SAT_FLAG

bit2 : SAT ON
1 : SAT ON
0 : SAT OFF

Normal value 1

Normal value 04

㉕ : DRAM_CONT_ADDL_DP (Hex,address)
㉖ : DRAM_CONT_ADDM_DP (Hex,address)

Start address of buffer memory (bank) of data to be written and read

Actual address = oonn (Hex) *400 (Hex) +24000000 (Hex)

㉗ : DRAM_CONT_CONT_DP

bit0 : read_write
0 : write
1 : read
bit1 : xfer_en
0 : off
1 : on

	Write		Read	
	Out point	Other	Inì point	Other
Normal value	00	02	01	03

㉘ : H_DPR_REG0_3 (EE/PB control)

Normal value 01

㉙ : H_DPR_REG0_2 (C1 error correction ability (e+n))
㉚ : H_DPR_REG0_1 (C1 error correction ability (e))
㉛ : H_DPR_REG0_0 (C1 error correction ability (n))

C1 Error correction ability setting value

	Write	Read
Normal value	A0	A1

Reduce the correction ability during writing than reading, so that no recording near the correction border remains on the tape.

㉜ : H_DPR_REG0_7 (IC test report (c1_enc))
㉝ : H_DPR_REG0_6 (IC test report (c1_dec))
㉞ : H_DPR_REG0_5 ((not used))
㉟ : H_DPR_REG0_4 (test mode control)

㊱ : H_DPR_REG0_B (C1 random error (Cch)) (Hex)
㊲ : H_DPR_REG0_A (C1 random error (Bch)) (Hex)
㊳ : H_DPR_REG0_9 (C1 random error (Ach)) (Hex)

Number of bytes which can be C1 error corrected when error was detected.
As the error byte number cannot be determined for blocks which could not be corrected, the bytes are not added for random error.
The number of blocks which could be corrected are calculated from the C1 burst error.

00 (Hex) is 0 byte when it could be fully corrected or could not be fully corrected.

Normal value 00

㊴ : H_DPR_REG0_8 (C1 correction control)
㊵ : H_DPR_REG0_F (option mode DATA resistor)
㊶ : H_DPR_REG0_E (option mode ADDRESS resistor)
㊷ : H_DPR_REG0_D ((not used))

㊸ : H_DPR_REG0_C (C1 random error (Dch)) Hex

㊱ : H_DPR_REG0_B (C1 random error (Cch)) reference

㊹ : H_DPR_REG1_3 (erasure off/C2 dec control)

㊺ : H_DPR_REG1_2 (C2 error correction ability (e+n))
㊻ : H_DPR_REG1_1 (C2 error correction ability (e))
㊼ : H_DPR_REG1_0 (C2 error correction ability (n))

C2 Error correction setting value

Normal value A0

㊽ : H_DPR_REG1_7 (C1 burst error (Cch)) Hex
㊾ : H_DPR_REG1_6 (C1 burst error (Bch)) Hex
㊿ : H_DPR_REG1_5 (C1 burst error (Ach)) Hex

Number of blocks which could be read correctly after C1 error correction.
When all the data in the block could be read, then;

D0 (Hex) = 208 blocks.

This indicates that the greater the number, the better is the data state of each channel.

(No. of blocks which could not be corrected) = 208 − (C1 burst error of each channel)

C2 error correction is carried out for data of blocks which could not be corrected.

(51) : H_DPR_REG1_4 (REC_ENABLE/SAT ON/OFF control)
(52) : H_DPR_REG1_B (Mechanism adjustment signal generation control)
(53) : H_DPR_REG1_A (Mechanism adjustment REC ENABLE control)

(54) : H_DPR_REG1_9 (FM parity err)

b1 : parity error
1 : parity error exist
0 : no error

Normal value 0

Normal value FC or FD

⑮ : H_DPR_REG1_8 (C1 burst error (Dch)) (Hex)

Number of blocks which could be C1 corrected normally.
When the burst error has not occurred for all, then;

D0 (Hex) = 208 block

Normal value D0

⑯ : H_DPR_REG1_F (read exor data)
⑰ : H_DPR_REG1_E (Processor test mode)
⑱ : H_DPR_REG1_D (IC test report (c2 enc/dec))
⑲ : H_DPR_REG1_C (IC test control (diag mode))

① to ④ : V_LTCR (BCD, Time Code)

Absolute Time Code value when the LTC is soft-corrected by READ_TIME

aa : hours
bb : minutes
cc : seconds
dd : Frames

⑤ : l_search_count (Hex, Frame)

Number of frames counted by IDC (C_CTL_COUNT) while executing longitudinal search CMD.
As each block is reset by block with 50 frames as one block, the frames change from Frame 1 to 51 (=33 Hex).

⑫ to ⑮ : C_CTL_COUNT (BCD, Time Code)

Relative Time Code value at which the counted by Reel FG
(Reference when the CTL signal is not recorded)

aa : hours
bb : minutes
cc : seconds
dd : Frames

⑯ : normal_ltc_count (Hex, Frame)

Number of frames at which the LTC could be normally read while executing longitudinal search CMD.
If LTC could be read normally, it is determined that RD06 is x8 (Hex).

When 1_search_count becomes 51 (=33 Hex frame), if counted more than 41 (=29 Hex) frames, it is determined that the LTC of this block was recorded normally.

Normal value Above (1_search_count-10)

⑰ to ⑳ : CTL (BCD, Time Code)

Relative Time Code value counted using CTL

gg : hours
hh : minutes
ii : seconds
jj : Frames

㉑ : normal_ctl_count (Hex, Frame)

Relative Time Code value counted using CTL

Number of frames counted by the CTL while executing longitudinal search CMD.
When 1_search_count becomes 51 (=33 Hex) frame, if counted more than 41 (=29 Hex) frames, it is determined that the CTL of this block was recorded normally.

Normal value Above (1_search_count-10)

㉒ : total_search_count (Hex, Frame)

Total number of frames when counting with IDC (C_CTL_COUNT) while executing longitudinal search CMD

Command List (in Alphanumerical order)

Command	Title	Description
ERR	System Error Code Check	Displays the system error code and error message.
HELP	Command List	Displays the command list in the maintenance mode.
HOURS	Hours Meter	Displays the hours meter and thread counter values.
HRR	Hours Meter Reset	Resets the hours meter and thread counter value.
savehours	Save Hours Meter	Stores the hours meter value in the MA-83 board.
presethours	Preset Hours Meter	Stores the hours meter value, stored in the MA-83 board, in the S-54 board.
QUIT	Quit Maintenance Mode	Terminates the maintenance mode.
RF	RF Adjust/Check Command List	Displays the adjustment/check command list in a RF system.
*1 RF01	PB All Adjust	Adjusts RF PB block automatically and continuously.
*1 RF02	PB Level Adjust	Adjusts the PB level.
*1 RF03	PB PLL Adjust	Adjusts the VCO free-running frequency in a PB PLL circuit.
*1 RF04	PB Equalizer Adjust	Adjusts the gain and phase in a PB equalizer circuit.
*2 RF05	REC Current Adjust	Adjusts the REC current level.
RF06	RF Adjust Data Display	Displays the whole adjustment data list of RF electronic VR.
RF07	RF NV-RAM Save	Saves the adjustment data of RF electronic VR in a NV-RAM (Non-volatile RAM).
RF08	RF NV-RAM Load	Sets the RF adjustment data of a NV-RAM to RF electronic VR.
RF09	RF Initial Data Set	Sets the initial value of adjustment data to RF electronic VR.
SV	Servo Adjust/Check Command List	Displays the adjustment/check command list in a servo system.
SV01	Reel/Capstan All Adjust	Adjusts SV02 to SV09 automatically and continuously.
SV02	S Reel FG Duty Adjust	Adjusts the duty cycle of a S reel FG.
SV03	T Reel FG Duty Adjust	Adjusts the duty cycle of a T reel FG.
SV04	Capstan FG Duty Adjust	Adjusts the duty cycle of a capstan FG.
SV05	S Reel offset/friction Adjust	Adjusts the offset and friction of a S reel motor.
SV06	T Reel offset/friction Adjust	Adjusts the offset and friction of a T reel motor.
SV07	S Reel Torque Adjust	Adjusts the torque of a S reel motor.
SV08	T Reel Torque Adjust	Adjusts the torque of a T reel motor.
SV09	S/T Tension offset Adjust	Adjusts the offset of a S/T tension regulator.
*3 SV0A	Free Speed Adjust	Adjusts the free speed of a capstan motor.
*3 SV0B	RF Switching Position Adjust	Adjusts the RF switching position.
SV0C	Servo NV-RAM Save	Saves the servo adjustment data in two NV-RAMs.
SV0D	Cassette Switch Check	Displays the state of a cassette tab sensors and REC inhibit sensors.
SV0E	Cassette Comp. Switch Check	Displays the sensor state in a cassette compartment block.
SV0F	Tape Top/End Sensor Check	Displays the state of a tape top sensor and a tape end sensor.
SV10	Dew Sensor Check	Displays the state of a dew sensor.
SV11	S Reel Motor Check	Checks the function of a S reel motor.
SV12	T Reel Motor Check	Checks the function of a T reel motor.
SV13	Threading Motor Check	Checks the function of a threading motor.
SV14	Cassette Comp. Motor Check	Checks the function of a cassette compartment motor.
SV15	Capstan Motor Check	Checks the function of a capstan motor.
SV16	Drum Motor Check	Checks the function of a drum motor.
SV17	Reel Shift Motor Check	Checks the function of a reel shift motor.
SV18	Pinch Roller Solenoid Check	Checks the function of a pinch roller solenoid.

Command	Title	Description
SV19	S Reel Brake Solenoid Check	Checks the function of a S reel brake solenoid.
SV1A	T Reel Brake Solenoid Check	Checks the function of a T reel brake solenoid.
SV1B	Cleaning Roller Solenoid Check	Checks the function of a cleaning roller solenoid.
SV1C	Reel/Capstan Motor & FG Check	Check the followings automatically and continuously. ・ Reel FG and reel motor operations (on supply and take-up sides) ・ Capstan FG and capstan motor operations ・ Reel offset and friction (on supply and take-up sides) ・ Reel motor torque (on supply and take-up sides)
∗1 SV1D	SAT Function Check	Checks the function of an automatic tracking circuit.
∗4 SV1E	Manual PG Adjustment	Adjusts the PG manually.
SV1F	Servo NV-RAM Check	Checks the NV-RAM for servo system.

∗1: This command requires alignment tape YR5-1.
∗2: This command requires a recording tape.
∗3: This command requires alignment tape YR2-1.
∗4: This command requires alignment tape YR2-1 and an oscilloscope.

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ERR System Error Code Check

Function: Displays the system error code, error message, and sub-code detected by this unit.
For the system error list, refer to the next page. (For more details, refer to Section 6-3-3.)
If a system error occurs, the prompt is displayed as "------#".

Operation: Enter command.

Example:

• System error occurs (Example: System error code 93 and sub-code 02)

```
------#err
System Error code = 93  Sub code = 02
 [Inter CPU communication error (SV)]
------#_
```

• No system error occurs

```
------>err
No Error
------>_
```

HELP Commmand List

Function: Displays the command list in the maintenance mode.

Operation: Enter command.

Example:

```
------>help
Command List
  HOURS  : Hours Meter
  HRR    : Hours Meter Reset
  RF     : RF Adjust/Check Help
  RFxx   : RF Adjust/Check Exec
  SV     : Servo Adjust/Check Help
  SVxx   : Servo Adjust/Check Exec
  ERR    : System Error Code Check
  CLS    : Clear Screen
  HELP   : this Help
  QUIT   : Quit this Maintenance
------>_
```

∗ "xx" in "RFxx" or "SVxx" indicates the number of adjustment and check commands in an RF or servo system.

HOURS Hours Meter

Function: Displays the hours meter and thread counter values.
The numeric value of an hours meter is displayed in units of one hour.

Operation: Enter command.

Example:

```
Hours Meter
  Operation Hours=  2252  Drum Run-1 Hours(res)=    64
  Drum Run Hours =   697  Drum Run-2 Hours(res)=    62
  Tape Run Hours =   495  Tape Run Hours  (res)=   445
  Thread Counter = 12955  Thread Counter  (res)= 12955

  Cleaning Tape  =    11  Cleaning Tape   (res)=     3
  Invalid Clean  =     2  Invalid Clean   (res)=     1
```

Description of display:

Operation Hours : Totally accumulated time of current conduction*1
Drum Run Hours : Totally accumulated time of drum rotation*2
Tape Run Hours : Totally accumulated time of tape run
Thread Counter : Totally accumulated number of threading and unthreading counts*3
Drum Run-1 Hours (res) : Accumulated time of drum rotation 1*2
(This item is reset using an HRR command after drum replacement.)
Drum Run-2 Hours (res) : Accumulated time of drum rotation 2 *2
(The item is automatically reset when cleaning tape is used.)
Tape Run Hours (res) : Accumulated time of tape run
(This item can be reset using an HRR command.)
Thread Counter (res) : Accumulated number of threading and unthreading counts *3
(This item can be reset using an HRR command.)
Cleaning Tape : Total number of times the cleaning tape was used
Number of times effective cleaning operations were carried out
Cleaning Tape (res) : Number of times the cleaning tape was used
Number of times effective cleaning operations were carried out
Reset by HRR CMD
Invalid Clean : Total number of times the cleaning tape was used ineffectively
Number of times cleaning operations were not carried out effectively because a cleaning tape which had reached the tape end was inserted.
Invalid Clean (res) : Number of times the cleaning tape was used ineffectively
Number of times cleaning operations were not carried out effectively because a cleaning tape which had reached the tape end was inserted.
Reset by HRR CMD

∗1: Time for which this unit is energized.
∗2: Time for which the drum rotates in the thread end state (in which the tape touches the drum).
∗3: The cycle of one thread state is unthread end state, thread end state, then unthread end state.

HRR Hours Meter Reset

Function: Resets the hours meter “Drum Run-1 Hours (res) and Drum Run-2 Hours (res)” or “Tape Run Hours (res)”, Thread Counter (res)”, “Cleaning Tape (res)”, and “Invalid Clean (res)”.

Note

The reset numerical value cannot be returned to the former value.

Resets the Drum Run-1 Hours (res) and Drum Run-2 Hours (res) simultaneously as a Drum Run Hours (res).

Operation: (1) Enter command.

(2) To select the item to be reset, enter the number.
Enter 1 and press the ENTER key to be reset Drum Run Hours (res).
Enter 2 and press the ENTER key to be reset Tape Run Hours (res).
Enter 3 and press the ENTER key to be reset Thread Counter (res).
Enter 4 and press the ENTER key to be reset Cleaning Tape (res).
Enter 5 and press the ENTER key to be resetInvalid Clean (res).

(3) Press the Y key to initiate reset.
* To stop the execution, press the N key.

Examples:

• For Drum Run Hours (res)

```
------>hrr

Hours Meter Reset

  [Drum Run Hours  (res)] = 1
  [Tape Run Hours  (res)] = 2
  [Thread Counter  (res)] = 3

  [Cleaning Tape   (res)] = 4
  [Invalid Clean   (res)] = 5

    Select Reset Meter (1-5)? 1
      [Drum Run Hours  (res)]

    Are you Ready (y/n)? Yes

    Reset [Drum Run Hours  (res)]
------>
```

• For Tape Run Hours (res)

```
------>hrr

Hours Meter Reset

  [Drum Run Hours  (res)] = 1
  [Tape Run Hours  (res)] = 2
  [Thread Counter  (res)] = 3

  [Cleaning Tape   (res)] = 4
  [Invalid Clean   (res)] = 5

    Select Reset Meter (1-5)? 2
      [Tape Run Hours  (res)]

    Are you Ready (y/n)? Yes

    Reset [Tape Run Hours  (res)]
------>
```

• For Thread Counter (res)

```
------>hrr

Hours Meter Reset

  [Drum Run Hours  (res)] = 1
  [Tape Run Hours  (res)] = 2
  [Thread Counter  (res)] = 3

  [Cleaning Tape   (res)] = 4
  [Invalid Clean   (res)] = 5

    Select Reset Meter (1-5)? 3
      [Thread Counter  (res)]

    Are you Ready (y/n)? Yes

    Reset [Thread Counter  (res)]
------>
```

• For Invalid Clean (res)

```
------>hrr

Hours Meter Reset

  [Drum Run Hours  (res)] = 1
  [Tape Run Hours  (res)] = 2
  [Thread Counter  (res)] = 3

  [Cleaning Tape   (res)] = 4
  [Invalid Clean   (res)] = 5

    Select Reset Meter (1-5)? 5
      [Invalid Clean   (res)]

    Are you Ready (y/n)? Yes

    Reset [Invalid Clean   (res)]
------>
```

• For Cleaning Tape (res)

```
------>hrr

Hours Meter Reset

  [Drum Run Hours  (res)] = 1
  [Tape Run Hours  (res)] = 2
  [Thread Counter  (res)] = 3

  [Cleaning Tape   (res)] = 4
  [Invalid Clean   (res)] = 5

    Select Reset Meter (1-5)? 4
      [Cleaning Tape   (res)]

    Are you Ready (y/n)? Yes

    Reset [Cleaning Tape   (res)]
------>
```

SAVEHOURS save hours meter

Function: Stores the hours meter value in the backup RAM on the MA-83 board.
Stores the hours meter value before the MS-54 board is replaced. Presets the hours meter value to the NV-RAM on the replaced MS-54 board using a PRESETHOURS command after replacement.
Do not replace the MA-83 board together with the MS-54 board.
If there is a need to replace them together, replace the MA-83 board and then perform SAVEHOURS, and then replace the MS-54 board.

Operation: Enter command.

Example:

• When the hours meter value could be stored normally

```
------>savehours

Save Hours Meter from MS-54 board to MA-83 board

  Are you Ready (y/n) ? Yes

  Save Hours Meter
------>
```

• When the hours meter value could not be read from the MS-54 board

```
------>savehours

Save Hours Meter from MS-54 board to MA-83 board

  Are you Ready (y/n) ? Yes

  Hours Meter can’t read from MS-54 board!
------>
```

PRESETHOURS Preset Hours Meter

Function: Presets the hours meter value stored in the MA-83 board to the NV-RAM on the MS-54 board.

* To prevent the hours meter value from being preset by mistake, a PRESETHOURS command cannot be normally executed before a SAVEHOURS command is executed.

Operation: Enter command.

Example:

• When the hours meter value could be preset normally

```
------>presethours

Preset Hours Meter to MS-54 board

  Are you Ready (y/n) ? Yes
------>
```

• When a PRESETHOURS command was executed without executing a SAVEHOURS command

```
------>presethours

Preset Hours Meter to MS-54 board

  Are you Ready (y/n) ? Yes

  Hours Meter not Saved
------>
```

QUIT Quit Maintenance Mode

Function: Terminates the SV/RF maintenance mode, then return to the drive maintenance mode (MDRV) input.

Operation: Enter command.

Example:

```
------>quit
```

RF RF Adjust/Check Command List

Function: Displays the adjustment and check command list in an RF system.

Operation: Enter command.

Example:

```
------>rf
RF Adjust/Check Command List
  RF01: RF All Adjust               RF07: RF NV-RAM Save
  RF02: PB Level Adjust             RF08: RF NV-RAM Load
  RF03: PB PLL Adjust               RF09: RF Initial Data Set
  RF04: PB Equalizer Adjust
  RF05: Rec Current Adjust
  RF06: RF Adjust Data Display
------>_
```

RF01 PB All Adjust (RF adjustment command)

Function: Adjusts RF PB block automatically and continuously.

Operation: (1) Enter command.
After the title, the following message is then displayed on the screen.

```
Set YR5-1 (Alignment Tape)
  Are you ready (y/n/else=Eject)?
```

* To stop the execution of adjustment, press the N key.
* To eject of cassette tape, press a key except Y and N.

(2) Insert alignment tape YR5-1 into this unit.

* Do not use tapes other than YR5-1. It is impossible to perform this adjustment properly in this case.
* To move the tape address during adjustment start, use the control software of GY-2120. (Refer to Section 1-10.)

(3) Press the Y key to initiate adjustment. Each item during adjustment is displayed sequentially.

* Press the Y key without inserting a tape to display the message again.
* Message "# Adjust Incomplete (Tape end detected) #" is displayed on the screen, rewind the tape to tape top, then readjust.

(4) Message "ALL Adjust Complete" is displayed on the screen when the adjustment succeeds.
Message "# Adjust Incomplete #" is displayed on the screen when the adjustment fails.

(5) To save adjustment data in an NV-RAM (Non-volatile RAM), execute command RF07 (RF NV-RAM Save).

* After other RF adjustment, RF adjustment data can be collectively saved in an NV-RAM.
  To return the adjustment data to the state before adjustment, execute command RF08 (RF NV-RAM Load).
* All other RF adjustment data that has not been saved in the NV-RAM is also returned when command RF07 is executed.

Examples:

• When the adjustment succeeds

```
------>rf01
RF Adjust [Auto Adjust]

  PB All Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

  PB PLL Adjust....OK
  PB Level Adjust....OK
  PB Equalizer Adjust....OK
  PB Level Adjust....OK

    ALL Adjust Complete

------>_
```

• When the adjustment fails
(Example: PB Level Adjust fails.)

```
------>rf01
RF Adjust [Auto Adjust]

  PB All Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

  PB PLL Adjust....OK
  PB Level Adjust....NG

    # Adjust Incomplete #

------>_
```

RF02 PB Level Adjust (RF adjustment command)
RF03 PB PLL Adjust (RF adjustment command)
RF04 PB Equalizer Adjust (RF adjustment command)

Function: RF02: Adjusts the PB level.
RF03: Adjusts the VCO free-running frequency of a PB PLL circuit.
RF04: Adjusts the gain and phase in a PB equalizer circuit.

Operation: The commands above are the same in operation.

(1) Enter command.
After the title, the following message is then displayed on the screen.

```
Set YR5-1 (Alignment Tape)
 Are you ready (y/n/else=Eject)?
```

* To stop the execution of adjustment, press the N key.
* To eject of cassette tape, press a key except Y and N.

(2) Insert alignment tape YR5-1 into this unit.

* Do not use tapes other than YR5-1. It is impossible to perform this adjustment properly in this case.
* To move the tape address during adjustment start, use the control software of GY-2120. (Refer to Section 1-10.)

(3) Press the Y key to initiate adjustment. During adjustment, the message "Adjusting....." is displayed on the screen.

* Press the Y key without inserting a tape to display the message again.
* Message "# Adjust Incomplete (Tape end detected) #" is displayed on the screen, rewind the tape to tape top, then readjust.

(4) Message "Adjust Complete" is displayed on the screen when the adjustment succeeds.
Message "# Adjust Incomplete #" is displayed on the screen when the adjustment fails.

(5) To save adjustment data in an NV-RAM (Non-volatile RAM), execute command RF07 (RF NV-RAM Save).

* After other RF adjustment, RF adjustment data can be collectively saved in an NV-RAM.
To return the adjustment data to the state before adjustment, execute command RF08 (RF NV-RAM Load).
* All other RF adjustment data that has not been saved in the NV-RAM is also returned when command RF07 is executed.

Examples:

• For RF02 (When the adjustment succeeds)

```
------>rf02
RF Adjust [Auto Adjust]

 PB Level Adjust

  Set YR5-1 (Alignment Tape)
   Are you ready (y/n/else=Eject)? Yes

   Adjust Complete

   Ach  PB Level  75
   Bch  PB Level  7E
   Cch  PB Level  75
   Dch  PB Level  81

------>_
```

• For RF02 (When the adjustment fails)

```
------>rf02
RF Adjust [Auto Adjust]

 PB Level Adjust

  Set YR5-1 (Alignment Tape)
   Are you ready (y/n/else=Eject)? Yes

   # Adjust Incomplete #

   Ach  PB Level  80
   Bch  PB Level  70
   Cch  PB Level  80
   Dch  PB Level  60

------>_
```

Examples:

- For RF03 (When the adjustment succeeds)

```
------>rf03
RF Adjust [Auto Adjust]

  PB PLL Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

   A/Cch  PLL  80
   B/Dch  PLL  80

------>_
```

- For RF03 (When the adjustment fails)

```
------>rf03
RF Adjust [Auto Adjust]

  PB PLL Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    # Adjust Incomplete #

   A/Cch  PLL  48
   B/Dch  PLL  48

------>_
```

- For RF04 (When the adjustment succeeds)

```
------>rf04
RF Adjust [Auto Adjust]

  PB Equalizer Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

   Ach  Gain 76  Phase 79
   Bch  Gain 84  Phase 75
   Cch  Gain 6E  Phase 6A
   Dch  Gain 72  Phase 7F

------>_
```

- For RF04 (When the adjustment fails)

```
------>rf04
RF Adjust [Auto Adjust]

  PB Equalizer Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    # Adjust Incomplete #

   Ach  Gain 46  Phase 4A
   Bch  Gain 33  Phase 56
   Cch  Gain 46  Phase 4A
   Dch  Gain 33  Phase 56

------>_
```

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RF05 REC Current Adjust (RF adjustment command)

Function: Adjusts the REC current level in a recording head.

Operation: (1) Enter command.
After the title, the following message is then displayed on the screen.

```
Set Blank Tape
  Are you ready (y/n/else=Eject)?
```

* To stop the execution of adjustment, press the N key.
* To eject of cassette tape, press a key except Y and N.

(2) Insert a recording tape (a cassette tape on which data can be recorded) into this unit.

* Confirm that the cassette tape is not in the REC INHIBIT state.
* To move the tape address during adjustment start, use the control software of GY-2120. (Refer to Section 1-10.)

(3) Press the Y key to initiate adjustment. During adjustment, the message "Adjusting....." is displayed on the screen.

* Press the Y key without inserting a tape to display the message again.
* Message "# Adjust Incomplete (Tape end detected) #" is displayed on the screen, rewind the tape to tape top, then readjust.

(4) Message "Adjust Complete" is displayed on the screen when the adjustment succeeds. Message "# Adjust Incomplete #" is displayed on the screen when the adjustment fails.

(5) To save adjustment data in an NV-RAM (Non-volatile RAM), execute command RF07 (RF NV-RAM Save).

* After other RF adjustment, RF adjustment data can be collectively saved in an NV-RAM. To return the adjustment data to the state before adjustment, execute command RF08 (RF NV-RAM Load).
* All other RF adjustment data that has not been saved in the NV-RAM is also returned when command RF07 is executed.

Examples:

• When the adjustment succeeds

```
------>rf05
RF Adjust [Auto Adjust]

  REC Current Adjust

   Set Blank Tape
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

   Ach  REC Current  80
   Bch  REC Current  80
   Cch  REC Current  80
   Dch  REC Current  80

------>_
```

• When the adjustment fails

```
------>rf05
RF Adjust [Auto Adjust]

  REC Current Adjust

   Set Blank Tape
     Are you ready (y/n/else=Eject)? Yes

    # Adjust Incomplete #

   Ach  REC Current  F0
   Bch  REC Current  F0
   Cch  REC Current  F0
   Dch  REC Current  F0

------>_
```

RF06 RF Adjust Data Display (RF adjustment command)

Function: Displays the list of the current adjustment data that is set in RF electronic VR.

Operation: Enter command.

Example:

```
------>rf06
RF Adjust

  RF Adjust Data Display

   Ach  PB Level  75
   Bch  PB Level  7E
   Cch  PB Level  75
   Dch  PB Level  81

   A/Cch  PB PLL  76
   B/Dch  PB PLL  6A

   Ach  Gain 66  Phase 69
   Bch  Gain 74  Pahse 78
   Cch  Gain 4F  Phase 77
   Dch  Gain 68  Pahse 7B

   Ach  REC Current  80
   Bch  REC Current  80
   Cch  REC Current  80
   Dch  REC Current  80

------>_
```

RF07 RF NV-RAM Save (RF adjustment command)
RF08 RF NV-RAM Load (RF adjustment command)
RF09 RF Initial Data Set (RF adjustment command)

Function: RF07: Saves the adjustment data of RF electronic VR in an RF NV-RAM (Non-volatile RAM).

Note

Once the RF07 command is executed, the RF adjustment data cannot be returned to the state before adjustment.

RF08: Sets the adjustment data of an RF NV-RAM to RF electronic VR.
RF09: Sets the initial value of adjustment data to RF electronic VR.

Operation: (1) Enter command.
After the title, the following message is then displayed on the screen.

```
Are you ready (y/n)?
```

∗ To stop the execution of adjustment, press the N key.

(2) Press the Y key to initiate data transmission.
(3) After transmission is completed, messages below are displayed on the screen.
"Data Saved" for RF07 command
"Data Loaded" for RF08 command
"Data Set" for RF09 command

Examples:

• For RF07

```
------>rf07
RF Adjust [NV-RAM Control]

  RF NV-RAM Save

   Are you ready (y/n)? Yes

    Saving....OK

    Data Saved

------>_
```

• For RF08

```
------>rf08
RF Adjust [NV-RAM Control]

  RF NV-RAM Load

   Are you ready (y/n)? Yes

    Loading....OK

    Data Loaded

------>_
```

• For RF09

```
------>rf09
RF Adjust [Auto Adjust]

  RF Initial Data Set

   Are you ready (y/n)? Yes

    Setting....OK

    Data Set

------>_
```

SV Servo Adjust/Check Command List

Function: Displays the adjustment and check command list in a servo system.

Operation: Enter command.

Example:

```
------>sv
SV Adjust/Check Command List
  SV01: Reel/Capstan All Adjust       SV11: S Reel Motor Check
  SV02: S Reel FG Duty Adjust         SV12: T Reel Motor Check
  SV03: T Reel FG Duty Adjust        SV13: Threading Motor Check
  SV04: Capstan FG Duty Adjust       SV14: Cassette Comp. Motor Check
  SV05: S Reel offset/friction Adjust  SV15: Capstan Motor Check
  SV06: T Reel offset/friction Adjust  SV16: Drum Motor Check
  SV07: S Reel Torque Adjust         SV17: Reel Shift Motor Check
  SV08: T Reel Torque Adjust         SV18: Pinch Roller Solenoid Check
  SV09: S/T Tension offset Adjust     SV19: S Reel Brake Solenoid Check
  SV0A: Free Speed Adjust            SV1A: T Reel Brake Solenoid Check
  SV0B: RF Switching Position Adjust   SV1B: Cleaning Roller Solenoid Check
  SV0C: SV NV-RAM Save               SV1C: Reel/Capstan Motor & FG Check
  SV0D: Cassette Switch Check         SV1D: SAT Function Check
  SV0E: Cassette Comp. Switch Check    SV1E: Manual PG Adjustment
  SV0F: Tape Top/End Sensor Check     SV1F: SV NV-RAM Check
  SV10: Dew Sensor Check             SV20: CTL/Traking Auto Check
------>_                             SV21: Pairing Auto Check
```

SV01 Reel/Capstan All Adjust (Servo adjustment command)

Function: Adjusts servo adjustment commands SV02 to SV09 automatically and continuously.

Operation: (1) Enter command.
After the title, the following message is then displayed on the screen.

```
Are you ready (y/n)?
```

∗ To stop the execution of adjustment, press the N key.

(2) Press the Y key to initiate adjustment.

∗ Once adjustment is initialted, it cannot be stopped.
∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

Each item during adjustment is displayed sequentially.

(3) Message “ALL Adjust Complete” is displayed on the screen when the all adjustments succeed.
Message “# Adjust Incomplete #” is displayed on the screen when the adjustment fails. For the failure of adjustment, refer to page 6-98.

(4) To save adjustment data in the NV-RAM (Non-volatile RAM), execute command SV0C (Servo NV-RAM Save).

∗ After other servo adjustment, servo adjustment data can be collectively saved in the NV-RAM.

Examples:

• When the adjustment succeeds

```
------>sv01
Servo Adjust [Auto Adjust]

  Reel/Capstan All Adjust

   Are you ready (y/n)? Yes

  S Reel FG Duty Adjust....OK
  T Reel FG Duty Adjust....OK
  Capstan FG Duty Adjust....OK
  S Reel offset/friction Adjust....OK
  T Reel offset/friction Adjust....OK
  S Reel Torque Adjust....OK
  T Reel Torque Adjust....OK
  S/T Tension offset Adjust....OK

    ALL Adjust Complete

------>_
```

• When the adjustment fails
(Example: S-Reel FG Duty Adjust fails.)

```
------>sv01
Servo Adjust [Auto Adjust]

  Reel/Capstan All Adjust

   Are you ready (y/n)? Yes

  S Reel FG Duty Adjust....OK
  T Reel FG Duty Adjust....NG

  # Adjust Incomplete #

------>_
```

SV02 S Reel FG Duty Adjust (Servo adjustment command)
SV03 T Reel FG Duty Adjust (Servo adjustment command)
SV04 Capstan FG Duty Adjust (Servo adjustment command)
SV05 S-Reel offset/friction Adjust (Servo adjustment command)
SV06 T-Reel offset/friction Adjust (Servo adjustment command)
SV07 S-Reel Torque Adjust (Servo adjustment command)
SV08 T-Reel Torque Adjust (Servo adjustment command)
SV09 S/T Tension offset Adjust (Servo adjustment command)

Function: SV02: Adjusts the duty cycle of a S reel FG.
SV03: Adjusts the duty cycle of a T reel FG.
SV04: Adjusts the duty cycle of a capstan FG.
SV05: Adjusts the offset and friction of a S reel motor.
SV06: Adjusts the offset and friction of a T reel motor.
SV07: Adjusts the torque of a S reel motor.
SV08: Adjusts the torque of a T reel motor.
SV09: Adjusts the offset of a S/T tension regulator.

Operation: Since the commands above are the same in operation, the SV02 (S Reel FG Duty Adjust) command is described as an example.

(1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

Adjustment is then initiated. During adjustment, message “Adjusting.....” is displayed on the screen.

(2) Message “Adjust Complete” is displayed on the screen when the adjustment succeeds. Message “# Adjust Incomplete #” is displayed on the screen when the adjustmentfails. For the failure of adjustment, refer to page 6-98.

(3) To save adjustment data in the NV-RAM (Non-volatile RAM), execute command SV0C (Servo NV-RAM Save).

∗ After other servo adjustment, servo adjustment data can be collectively saved in the NV-RAM.

Examples:

• When the adjustment succeeds

```
------>sv02
Servo Adjust [Auto Adjust]

  S Reel FG Duty Adjust

    Adjust Complete

------>_
```

• When the adjustment fails

```
------>sv02
Servo Adjust [Auto Adjust]

  S Reel FG Duty Adjust

  # Adjust Incomplete #

------>_
```

SV0A Free Speed Adjust (Servo adjustment command)
SV0B RF Switching Position Adjust (Servo adjustment command)

Function: SV0A: Adjusts the free speed of a capstan motor.
SV0B: Adjusts the RF switching position.

Operation: The commands above are the same in operation.

(1) Enter command.
After the title, the following message is then displayed on the screen.

```
Set YR2-1 (Alignment Tape)
  Are you ready (y/n/else=Eject)?
```

* To stop the execution of adjustment, press the N key.
* To eject of cassette tape, press a key except Y and N.

(2) Insert alignment tape YR2-1 into this unit.

* Do not use tapes other than YR2-1. It is impossible to perform this adjustment properly in this case.
* To move the tape address during adjustment start, use the control software of GY-2120. (Refer to Section 1-10.)

(3) Press the Y key to initiate adjustment.
During adjustment, message "Adjusting....." is displayed on the screen.

* Press the Y key without inserting a tape to display the message again.
* Message "# Adjust Incomplete (Tape end detected) #" is displayed on the screen, rewind the tape to tape top, then readjust.

(4) Message "Adjust Complete" is displayed on the screen when the adjustment succeeds.
Message "# Adjust Incomplete #" is displayed on the screen when the adjustment fails.
For the failure of adjustment, refer to page 6-53.

(5) To save adjustment data in the NV-RAM (Non-volatile RAM), execute command SV0C (Servo NV-RAM Save).

* After other servo adjustment, servo adjustment data can be collectively saved in the NV-RAM.

Examples:

• For SV0A (When the adjustment succeeds)

```
------>sv0a
Servo Adjust [Auto Adjust]

  Free Speed Adjust

   Set YR2-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

------>_
```

• For SV0A (When the adjustment fails)

```
------>sv0a
Servo Adjust [Auto Adjust]

  Free Speed Adjust

   Set YR2-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

  # Adjust Incomplete #

------>_
```

• For SV0B (When the adjustment succeeds)

```
------>sv0b
Servo Adjust [Auto Adjust]

  RF Switching Position Adjust

   Set YR2-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

------>_
```

• For SV0B (When the adjustment fails)

```
------>sv0b
Servo Adjust [Auto Adjust]

  RF Switching Position Adjust

   Set YR2-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

  # Adjust Incomplete #

------>_
```

If message "# Adjust Incomplete #" is displayed on the screen when servo adjustment commands (SV01 to SV0B) are executed, check the following.

For SV02 (S Reel FG Duty Adjust)

Check the following circuits.
- S reel FG amplifier (DR-327 board)
- S reel motor driver (DR-327 board)

For SV03 (T Reel FG Duty Adjust)

Check the following circuits.
- T reel FG amplifier (DR-327 board)
- T reel motor driver (DR-327 board)

For SV04 (Capstan FG Duty Adjust)

Check the following circuits.
- Capstan FG amplifier (DR-327 board)
- Capstan motor driver (DR-327 board)

For SV05 (S Reel offset/friction Adjust)
- Readjust the S reel FG duty cycle (SV02).
- Check the S reel motor driver circuit (DR-327 board).

For SV06 (T Reel offset/friction Adjust)
- Readjust the T reel FG duty cycle (SV03).
- Check the T reel motor driver circuit (DR-327 board).

For SV07 (S Reel Torque Adjust)
- Readjust the S reel FG duty cycle (SV02).
- Check the S reel motor driver circuit (DR-327 board).

For SV08 (T Reel Torque Adjust)
- Readjust the T reel FG duty cycle (SV03).
- Check the T reel motor driver circuit (DR-327 board).

For SV09 (S/T Tension offset Adjust)

Check the following circuits.
- S tension detector circuit (IC40 on the DR-327 board)
- T tension detector circuit (IC32 on the DR-327 board)

For SV0A (Free Speed Adjust)
- Confirm that the playback tape is alignment tape YR2-1.

Check the following circuits.
- Capstan FG amplifier (DR-327 board)
- Capstan motor driver (DR-327 board)
- CTL amplifier (DR-327 board)

For SV0B (RF Switching Position Adjust)

Confirm that the playback tape is alignment tape YR2-1.
- Readjust the free speed (SV0A).

Check the following circuits.
- REC head PB circuit (EQ-66 board)
- Automatic tracking control circuit (Servo system on the EQ-66 board)

SV0C Servo NV-RAM Save (Servo adjustment command)

Function: Saves the adjustment data of servo electronic VR in the servo NV-RAM (Non-volatile RAM).

Note

Once this command is executed, the servo adjustment data cannot be returned to the state before adjustment.

Operation: (1) Enter command.
After the title, the following message is then displayed on the screen.

```
Are you ready (y/n)?
```

∗ To stop the execution of adjustment, press the N key.

(2) Press the Y key to initiate data transmission.
(3) After transmission is completed, message “Data Saved” is displayed on the screen.

Example:

```
------>sv0c
Servo Adjust [NV-RAM Control]

  SV NV-RAM Save

   Are you ready (y/n)? Yes

    Saving NV-RAM1....OK
    Saving NV-RAM2....OK

    Data Saved

------>_
```

SV0D Cassette Switch Check (Servo check command)

Function: Displays the state of a cassette tab sensor and REC inhibit sensor (switch). For the position of each sensor (switch), refer to the drawing on the next page.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Press each sensor (switch) with fingers. At that time, confirm that “0” under the corresponding switch number on the screen changes to “1”.
Moreover, confirm that “1” returns to “0” when each sensor (switch) is released from fingers. For NG, refer to the next page.

(3) To terminate a check, press the CTRL and C keys simultaneously.

Example:

```
------>sv0d
Servo Check [Input Check]

  Cassette Switch Check
   [KEY] CTRL-C=EXIT

    1:Cassette ID-1  2:Cassette ID-2
    3:Cassette ID-3  4:Cassette ID-4
    5:Cassette ID-5  6:Cassette ID-6
    7:S REC-INHI     8:L REC-INHI

     Manual Check Start

    7   1 2 3   8
         4 5        SW 87654321
          6            00000000

  Exiting...
------>_
```

① When only the cassette ID-1 sensor is pressed

```
SW 87654321
   00000001
```

② When only the cassette ID-2 sensor is pressed

```
SW 87654321
   00000010
```

③ When only the cassette ID-3 sensor is pressed

```
SW 87654321
   00000100
```

④ When only the cassette ID-4 sensor is pressed

```
SW 87654321
   00001000
```

⑤ When only the cassette ID-5 sensor is pressed

```
SW 87654321
   00010000
```

⑥ When only the cassette ID-6 sensor is pressed

```
SW 87654321
   00100000
```

⑦ When only the S cassette REC inhibit switch is pressed

```
SW 87654321
   01000000
```

⑧ When only the L cassette REC inhibit switch is pressed

```
SW 87654321
   10000000
```

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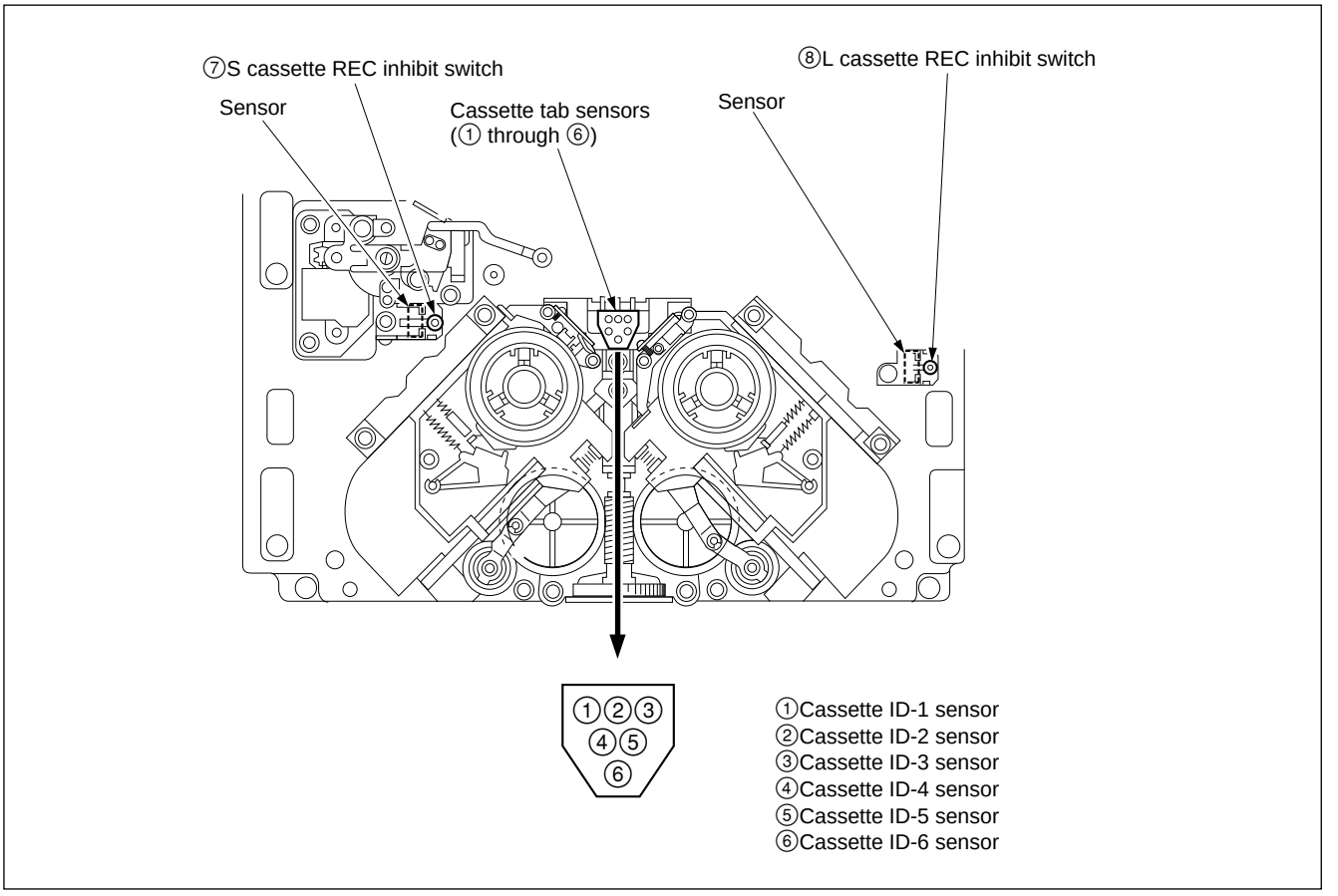
In case of NG:

When cassette tab sensors (①to ⑥) are NG:
- Check the corresponding sensor on the PTC-59 board.
- Check the sensor input port of a CPU (MS-54 board).

When REC inhibit sensors (⑦ and ⑧) are NG:
- Check the corresponding sensor on the MS-54 board.
- Check the sensor input port of a CPU (MS-54 board).



Sensor (Switch) Position

SV0E Cassette Compartment Switch Check (Servo check command)

Function: Displays the sensor (switch) state of a compartment block. For the position of each sensor (switch), refer to the drawing on the next page.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Push the cassette window up manually.
Press each switch with fingers. At that time, confirm that "[0]" under the corresponding switch number on the screen changes to "[1]".
Moreover, confirm that "[1]" returns to "[0]" when each switch is released from fingers.
For NG, refer to the next page.

(3) To terminate a check, press the CTRL and C keys simultaneously.

Example:

```
------>sv0e
Servo Check [Input Check]

  Cassette Compartment Switch Check
   [KEY] CTRL-C=EXIT

    SW1: Cassette IN Switch-1
    SW2: Cassette IN Switch-2
    SW3: Large Cassette Switch

      Manual Check Start

         SW3  SW1    SW2
         [0]  [0]    [0]

  Exiting...
------>_
```

SW1: When only cassette-in switch 1 is pressed

```
SW3  SW1    SW2
[0]  [1]    [0]
```

SW2: When only cassette-in switch 2 is pressed

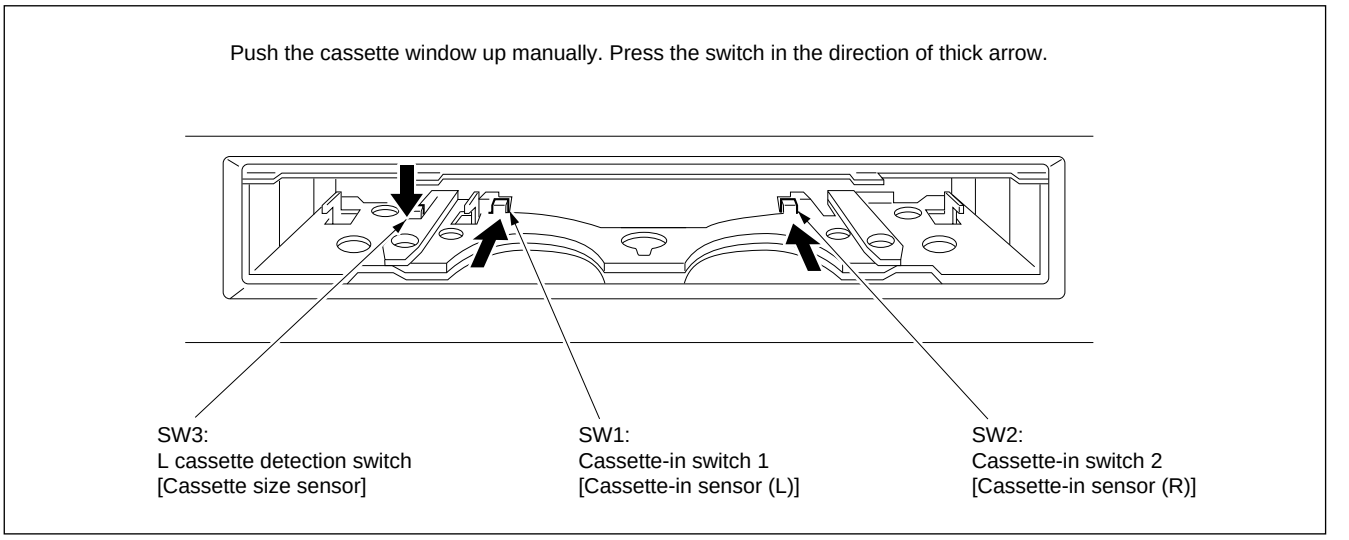
```
SW3  SW1    SW2
[0]  [0]    [1]
```

SW3: When only the L cassette detection switch is pressed

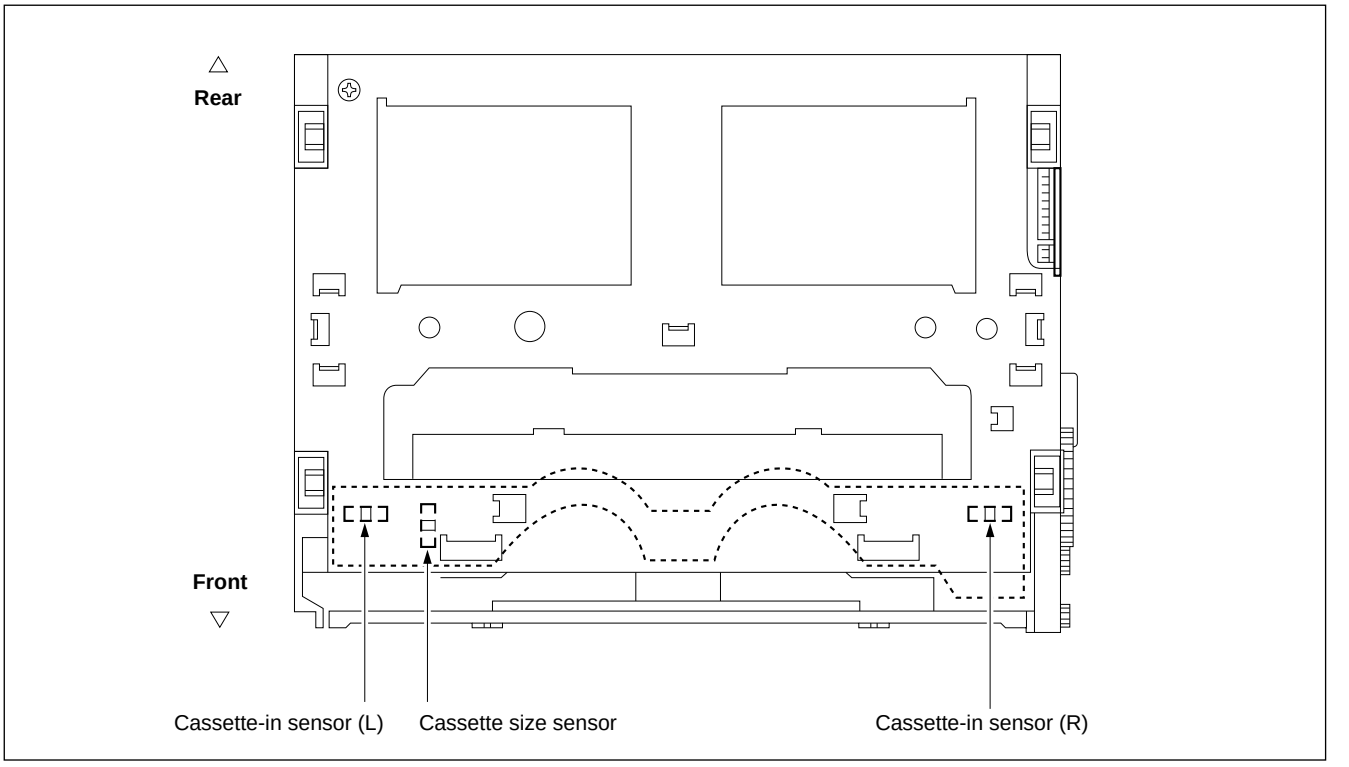
```
SW3  SW1    SW2
[1]  [0]    [0]
```

In case of NG:

- Check the corresponding sensor on the PC-70 board.
- Check the sensor input port of a CPU (MS-54 board).



Switch Position of Compartment Block



Top View of Cassette Compartment

SV0F Tape Top/End Sensor Check (Servo check command)

Function: Displays the state of a tape top sensor and tape end sensor. For the position of each sensor, refer to the diagram on the next page.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Bring a screwdriver (made of metal) near each sensor. At that time, confirm that “OFF” on the screen changes to “ON!”.

Note

Never bring a screwdriver into contact with each sensor.
Moreover, confirm that “ON!” returns to “OFF” when the screwdriver is detached. For NG, refer to the next page.

(3) To terminate a check, press the CTRL and C keys simultaneously.

Example:

```
------>sv0f
Servo Check [Input Check]

  Tape Top/End sensor Check
   [KEY] CTRL-C=EXIT

     Manual Check Start

     END             TOP
    SENSOR          SENSOR

     OFF             OFF

  Exiting...
------>_
```

END SENSOR : When the screwdriver is brought near only a tape end sensor

```
   END             TOP
  SENSOR          SENSOR

   ON!             OFF
```

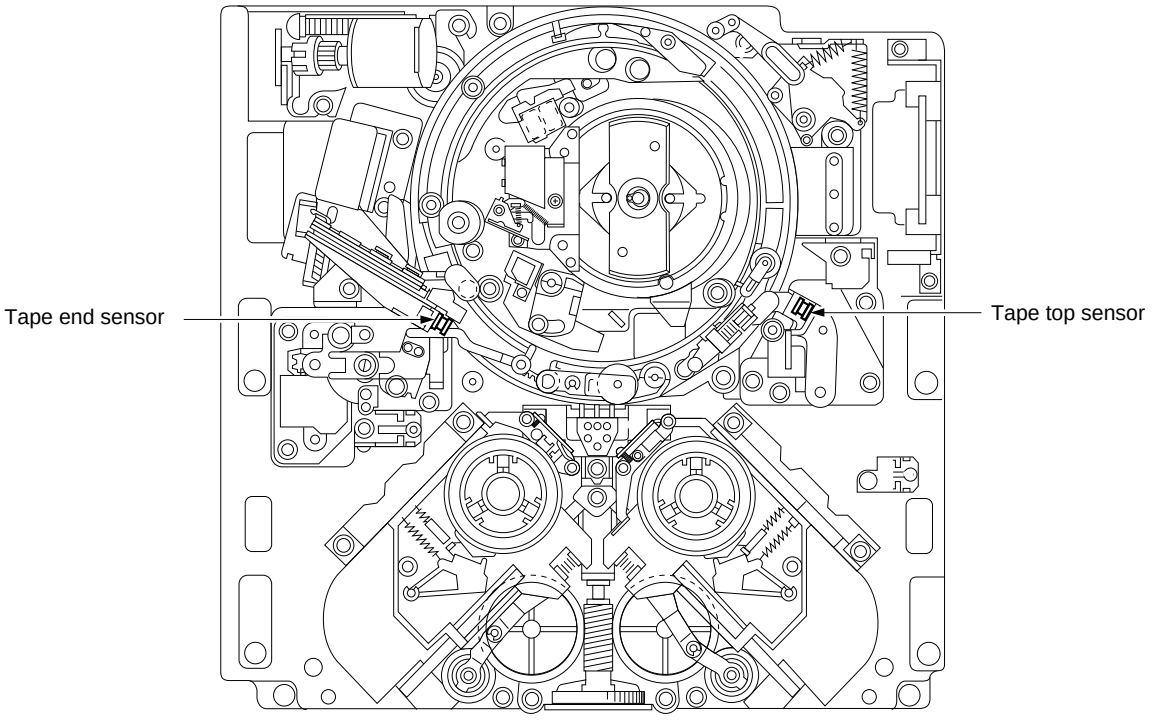
TOP SENSOR : When the screwdriver is brought near only a tape top sensor

```
   END             TOP
  SENSOR          SENSOR

   OFF             ON!
```

In case of NG:

- Check the sensor itself.
- Check the sensor oscillator/detector (DR-327 board or MS-54 board).
- Check the sensor input port of a CPU (MA-83 board).



< Upper-side view >

SV10 Dew Sensor Check (Servo check command)

Function: Displays the state of a dew sensor.
For the sensor position, refer to the drawing on the next page.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Touch the sensor slightly with a cotton swab moistened with water. At that time, confirm that “DRY” on the screen changes to “WET!”.
For NG, refer to the next page.
(3) Wipe the sensor with a dry cotton swab and eliminate moisture completely or blow wind against the sensor using a blower and evaporate moisture completely.
(4) Confirm that “WET!” on the screen changes to “DRY”.
For NG, refer to the next page.
(5) To terminate a check, press the CTRL and C keys simultaneously.

Example:

```
------>sv10
Servo Check [Input Check]

  Dew Sensor Check
   [KEY] CTRL-C=EXIT

    Manual Check Start

     DEW SENSOR : DRY

  Exiting...
------>_
```

- When the dew sensor is dry

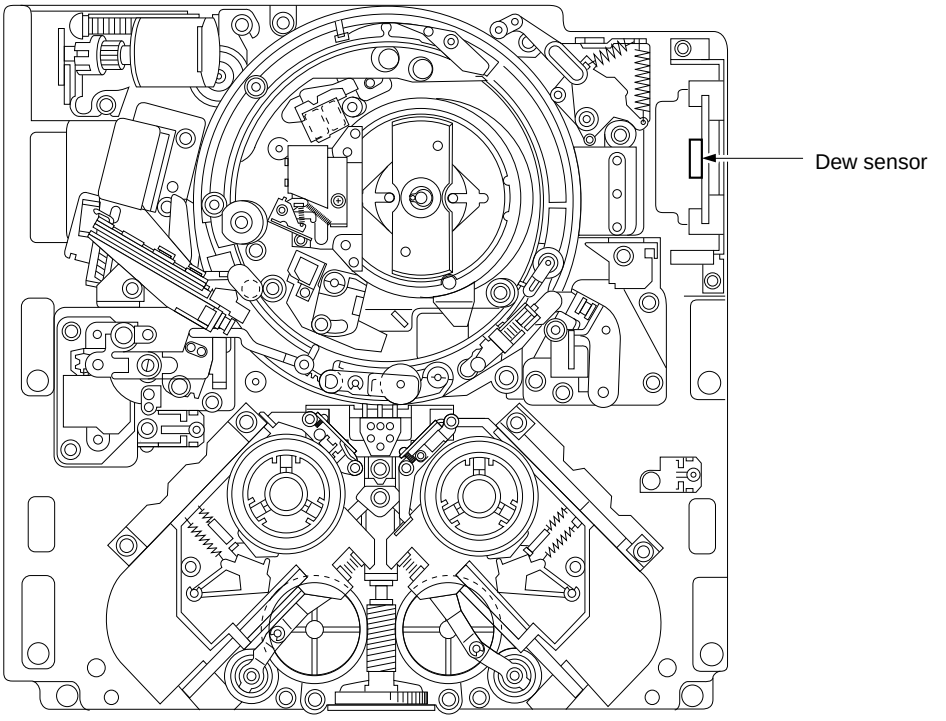
```
    DEW SENSOR : DRY
```

- When the dew sensor is wet

```
    DEW SENSOR : WET!
```

In case of NG:

- Check the sensor itself (DS241 on the SE-358 board).
- Check the sensor circuit (IC241 on the SE-358 board).
- Check the sensor input port of a CPU (MS-54 board).



< Upper-side view >

SV11 S Reel Motor Check (Servo check command)
SV12 T Reel Motor Check (Servo check command)

Function: SV11: Checks the function of a S reel motor.
SV12: Checks the function of a T reel motor.

Operation: The commands above are the same in operation.

(1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Confirm the following. For NG, refer to the next page.

∗ If abnormality is found in the reel brake operation, check using SV19 and SV1A commands.

① Confirm that the reel rotates clockwise at a constant speed (about 1 r.p.s.) (after the reel brake is released) when the J key is pressed.
② Confirm that the reel stops and the reel brake is applied when the space key is pressed.
③ Confirm that the reel rotates counterclockwise at a constant speed (about 1 r.p.s.) (after the reel brake is released) when the K key is pressed.
④ Confirm that the reel table stops and the reel brake is applied when the space key is pressed.

key	Screen display∗∗	Reel table movement
J	FORWARD	Rotates in the forward direction (↻)
K	REVERSE	Rotates in the reverse direction (↺)
Space	STOP	Stops

∗∗: This display changes every time the key is pressed. The reel motor rotation is not displayed, but detected.

(3) To terminate a check, press the CTRL and C keys simultaneously.

∗ The reel motor automatically stops when the CTRL and C keys are pressed simultaneously.

Examples:

• For SV11

```
------>sv11
Servo Check [Motor check]

  S Reel Motor Check
   [KEY] CTRL-C=EXIT
              J=FWD
              K=REV
           SPACE=STOP

     S Reel (top view)
    Forward: clock-wise
    Reverse: c.clock-wise

    Manual Check Start

           STOP

  Exiting...
------>_
```

• For SV12

```
------>sv12
Servo Check [Motor check]

  T Reel Motor Check
   [KEY] CTRL-C=EXIT
              J=FWD
              K=REV
           SPACE=STOP

     T Reel (top view)
    Forward: clock-wise
    Reverse: c.clock-wise

    Manual Check Start

           STOP

  Exiting...
------>_
```

In case of NG:

For SV11 (S Reel Motor Check)

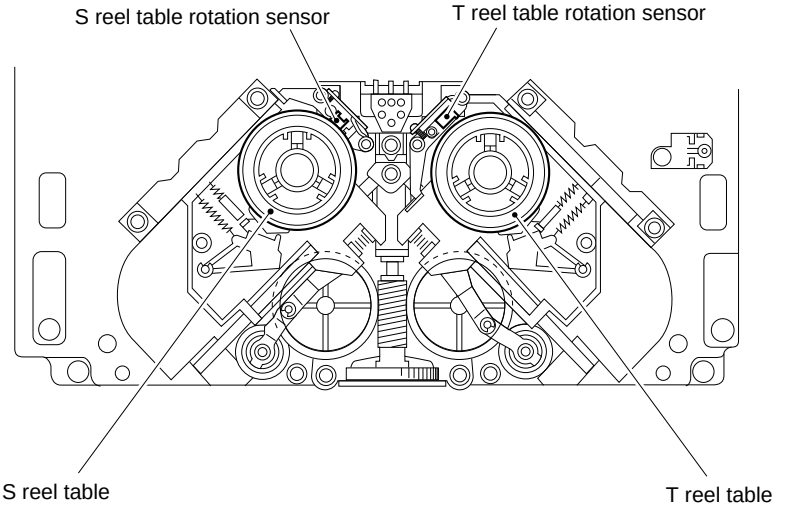
When the S reel table operation is defective:
- Check the S reel motor drive circuit (DR-327 board or MS-54 board).
- Check the S reel motor.

When the S reel table does not rotate at a constant speed (about 1 r.p.s.):
- Readjust the S reel FG duty cycle (SV07).
- Check the FG output from an S reel table rotation sensor.
- Check the S reel FG amplifier circuit (DR-327 board or MS-54 board).

For SV12 (T Reel Motor Check)

When the T reel table operation is defective:
- Check the T reel motor drive circuit (DR-327 board or MS-54 board).
- Check the T reel motor.

When the T reel table does not rotate at a constant speed (about 1 r.p.s.):
- Readjust the T reel FG duty cycle (SV08).
- Check the FG output from a T reel table rotation sensor.
- Check the T reel FG amplifier circuit (DR-327 board or MS-54 board).



< Upper-side view>

SV13 Threading Motor Check (Servo check command)

Function: Checks the function of a threading motor.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Press the J key and confirm the following. For NG, refer to the next page.
① Confirm that the threading ring moves counterclockwise and message "....." is displayed on the screen.
② Confirm that the threading ring stops in the thread end state and message "∗∗∗ THREAD END ∗∗∗" is displayed on the screen.

(3) Press the K key and confirm the following. For NG, refer to the next page.
① Confirm that the threading ring moves clockwise and message "....." is displayed on the screen.
② Confirm that the threading ring stops in the unthread end state and message "∗∗∗ UNTHREAD END ∗∗∗" is displayed on the screen.

Key	Threading ring movement
J or H	Moves counterclockwise (↺), and stops in the thread end state
K or L	Moves clockwise (↻), and stops in the unthread end state
Space	Stops temporarily

Note

In the normally check, never use the H or L key to stay out of trouble.
When press the H or L key, the threading ring moves at a faster than the J or K key. However, this operation gives a shock in the threading mechanism at the thread or unthread end state. This shock has been the fear of cause trouble.
In case of check with the H or L key, before reaching the thread or unthread end state, press the space key to stop the threading ring.

(4) To terminate a check, press the CTRL and C keys simultaneously.

∗ When the CTRL and C keys are released, the threading ring automatically returns to the unthread end state if no abnormality is found.

Note

Power to a motor stops to protect the motor and movable portion when the drive time of the motor continuously exceeds about six seconds due to its abnormality.
Message "[DRIVE TIME OUT]" is then displayed on the screen.

Example:

```
------>sv13
Servo Check [Motor check]

  Threading Motor Check
   [KEY] CTRL-C=EXIT
              H=Thread(FAST)
              J=Thread(SLOW)
              K=Unthread(SLOW)
              L=Unthread(FAST)
           SPACE=STOP

    Manual Check Start

    *** UNTHREAD END ***

  Exiting...
------>_
```

• In unthread end state

```
*** UNTHREAD END ***
```

• In thread end state

```
*** THREAD END ***
```

• In states other than thread end and unthread end

```
••••••••••••
```

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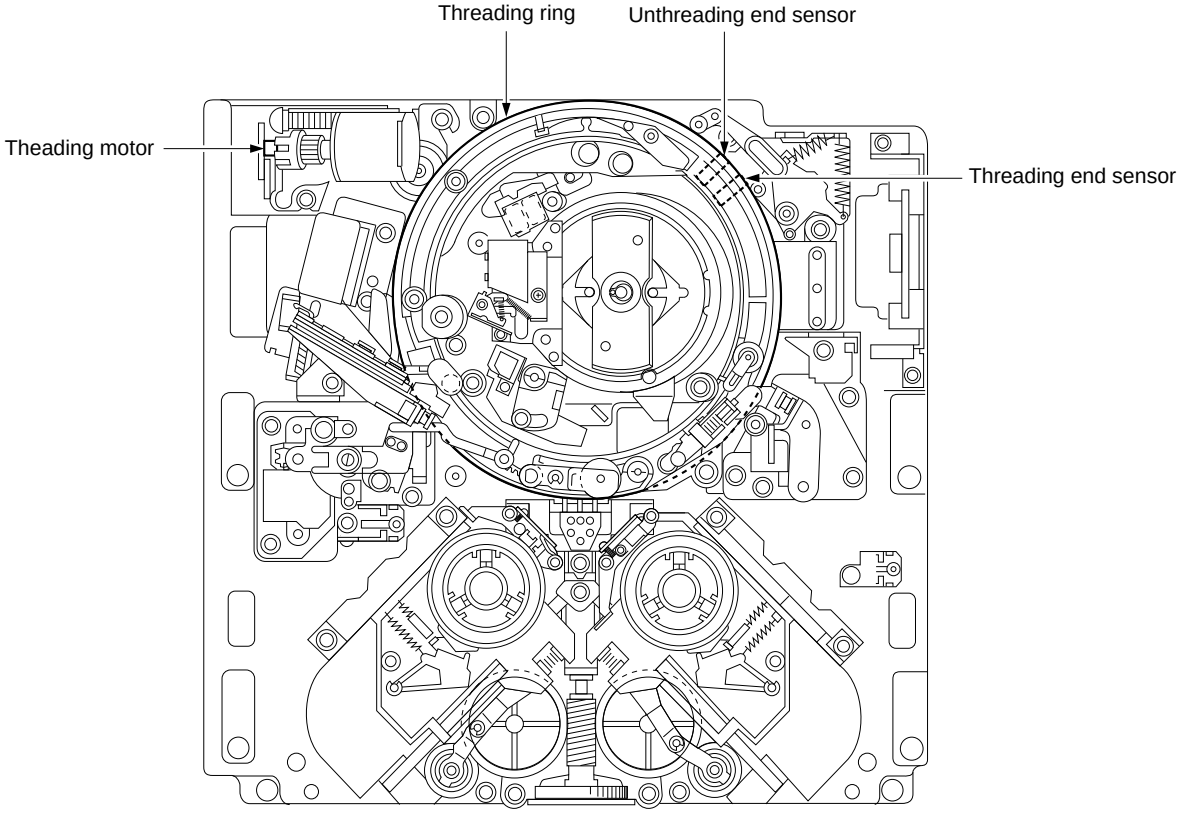
In case of NG:

When the threading ring operation is detective:
- Confirm that there is no mechanical abnormality.
- Check the threading motor drive circuit (DR-327 board or MS-54 board).
- Check the threading motor.

When the threading ring is in the thread end/unthread end state but message “. . . . . ” is displayed:
- Check the thread end sensor or unthread end sensor (TR-79 board).
- Check the sensor input port of a CPU (MA-83 board).



< Upper-side view >

SV14 Cassette Compartment Motor Check (Servo check command)

Function: Check the function of a cassette compartment motor.

Note

This unit is automatically shifted to the up state if the power is supplied when the compartment block is in states other than up. In this case, be careful not to interpose your hand or an object.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

Note

Be sure to take out the cassette tape from this unit. A message is also displayed on the screen. A cassette tape and this unit may be damaged due to the check operation when the cassette tape exists in the cassette compartment.

(2) Confirm the following. For NG, refer to the next page.

- The compartment block comes down when the K key is pressed. At that time, the display on the screen changes to UP, HORIZ., VERT., then DOWN.
- The compartment block goes up when the J key is pressed. At that time, the display on the screen changes to DOWN, VERT., HORIZ., then UP.

Key	Compartment block movement
J	Comes up, and stops in the up state.
K	Goes down, and stops in the down state.
Space	Stops temporarily.

(3) To terminate a check after returns the compertment block to the up state (press the J key), press the CTRL and C keys simultaneously.

∗ When the CTRL and C keys are pressed simultaneously, if the compartment block not returns to the up state, message “Exit only UP Position” is displayed on the screen.
∗ If message “[DRIVE TIME OUT]” is displayed, set the compartment block manually to the up state so as to terminate this command. This command is terminated when the compartment block is manually set to the up state. Prompt “------>” is then displayed. For how to move the compartment block manually, refer to the next page.

Note

Power to a motor stops to protect the motor and movable portion when the drive time of the motor continuously exceeds about six seconds due to its abnormality.
Message “[DRIVE TIME OUT]” is then displayed on the screen.

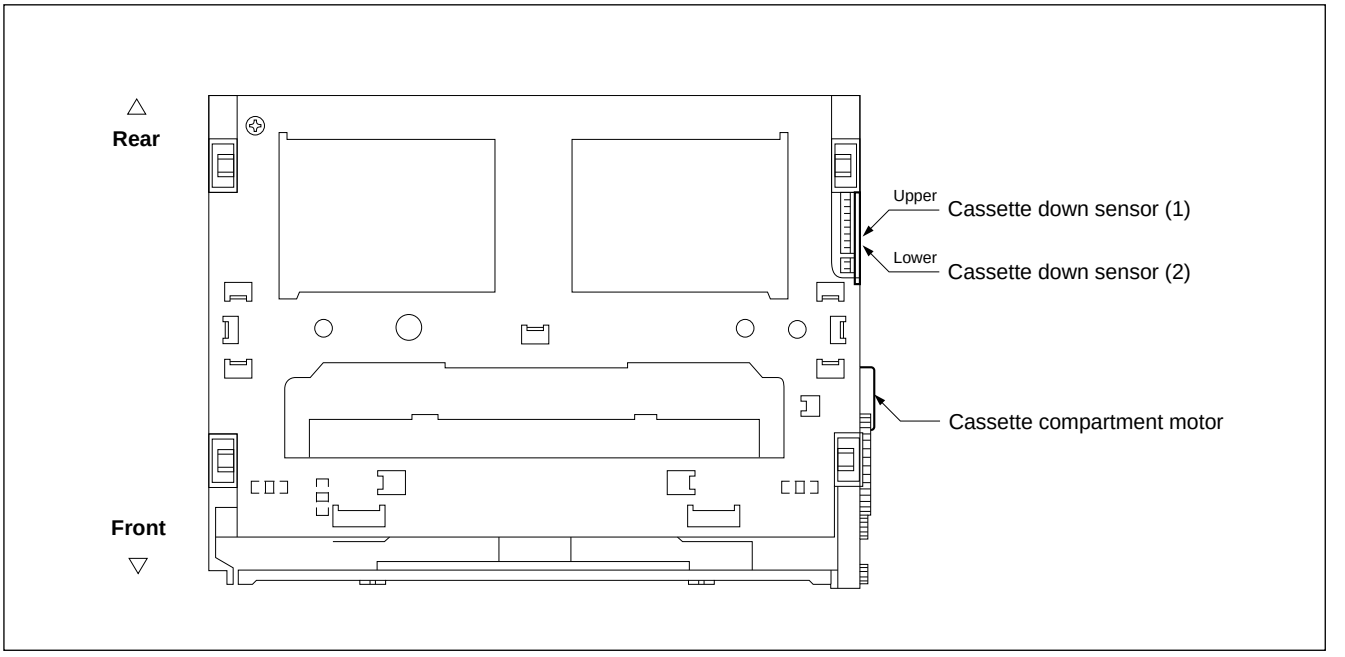
Example:

```
------>sv14
Servo Check [Motor check]

 Warning: Take out Tape from Cassette Compartment.

  Cassette Compartment Motor Check
   [KEY] CTRL-C=EXIT
              J=Cassette Comp. UP
              K=Cassette Comp. DOWN
          SPACE=STOP

    Manual Check Start

           UP    Exit only UP Position

  Exiting...
------>_
```

In case of NG:

When the compartment block operation is defective:
- Confirm that there is no mechanical abnormality.
- Check the cassette compartment motor drive circuit (DR-327 board or MS-54 board).
- Check the cassette compartment motor.

When the compartment block operation is normal but message “DRIVE TIME OUT” is displayed:
When the compartment block position does not coincide with the screen display:
- Check the cassette-down sensor (CL-29 board).
- Check the sensor input port of a CPU (MS-54 board).

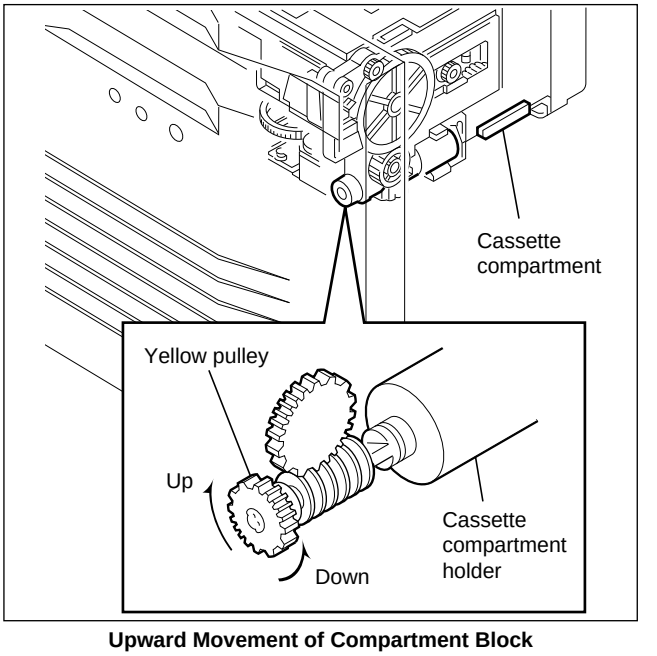


Top View of Cassette Compartment

How to move the compartment block manually

Turn the yellow pulley shown in the figure on the right. The compartment block then moves upward and downward.

To move the compartment block upward, turn the pulley clockwise.



Upward Movement of Compartment Block

SV15 Capstan Motor Check (Servo check command)

Function: Checks the function of a capstan motor automatically.

Operation: (1) Enter command.

* A cassette tape is automatically ejected when it has been inserted into this unit in this case. A check is then initiated.

(2) Confirm that message “Forward...OK” is displayed on the screen.
Moreover, confirm that message “Reverse...OK” is displayed.

* The “Forward” and “Reverse” check is repeatedly executed until the CTRL and C keys are pressed simultaneously.
  If “NG” is frequently displayed, refer to In Case of NG on this page.
* The types of the “NG” display are as follows:
  NG(speed) : Indicates that the speed is under the prescribed speed.
  NG(direction) : Indicates that the rotation direction does not coincide.

(3) To terminate a check, press the CTRL and C keys simultaneously.

* The capstan motor automatically stops when the CTRL and C keys are pressed simultaneously.

Example:

```
------>sv15
Servo Check [Motor Check]

  Capstan Motor Check
   [KEY] CTRL-C=EXIT

    Auto Check Start
     Forward...OK
     Reverse...OK
     Forward...OK
     Reverse...OK
     Forward...OK

  Exiting...
------>_
```

In case of NG:

- Check the capstan motor drive circuit (DR-327 board or MS-54 board).
- Confirm the capstan FG output.
- Check the capstan motor FG amplifier circuit (DR-327 board).

SV16 Drum Motor Check (Servo check command)

Function: Checks the function of a drum motor automatically.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case. A check is then initiated

The screen display just after the check is initiated is shown below.

```
Auto Check Start
 SPEED : NG     PHASE : UNLOCK  PG : NO EXIST
```

(2) Confirm that the display changes as shown below after a little while.
If display is not changed as below, refer to In Case of NG on this page.

```
Auto Check Start
 SPEED : NG     PHASE : LOCK    PG : EXIST
```

(3) To terminate a check, press the CTRL and C keys simultaneously.

∗ The drum motor automatically stops when the CTRL and C keys are pressed simultaneously.

Example:

```
------>sv16
Servo Check [Motor Check]

  Drum Motor Check
   [KEY] CTRL-C=EXIT

    Auto Check Start
     SPEED : OK      PHASE : LOCK    PG : EXIST

  Exiting...
------>_
```

In case of NG:

- Confirm that there is no mechanical abnormality in the drum.
- Check the drum motor drive circuit (DR-327 board or MS-54 board).
- Check the drum motor.
- Confirm the drum FG output and drum PG output.
- Check the drum FG amplifier circuit (DR-327 board).
- Check the drum PG amplifier circuit (DR-327 board).

SV17 Reel Shift Motor Check (Servo check command)

Function: Checks the function of a reel shift motor.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Press the J key and confirm the following. For NG, refer to the next page.
① Confirm that the reel table moves and message "....." is displayed on the screen.
② Confirm that the reel table stops in the L position and message "L-Position" is displayed on the screen.

(3) Press the K key and confirm the following. For NG, refer to the next page.
① Confirm that the reel table moves and message "....." is displayed on the screen.
② Confirm that the reel table stops in the S position and message "S-Position" is displayed on the screen.

Key	Reel table movement
J	Moves, and stops in the L position
K	Moves, and stops in the S position
Space	Stops temporarily

(4) To terminate a check, press the CTRL and C keys simultaneously.

Note

Power to a motor stops to protect the motor and movable portion when the drive time of the motor continuously exceeds about six seconds due to its abnormality.
Message "[DRIVE TIME OUT]" is then displayed on the screen.

Example:

```
------>sv17
Servo Check [Motor check]

  Reel Shift Motor Check
   [KEY] CTRL-C=EXIT
              J=L.Cassette Position
              K=S.Cassette Position
           SPACE=STOP

    Manual Check Start
        S-Position

  Exiting...
------>_
```

- For S position

```
S-Position
```

- For L position

```
L-Position
```

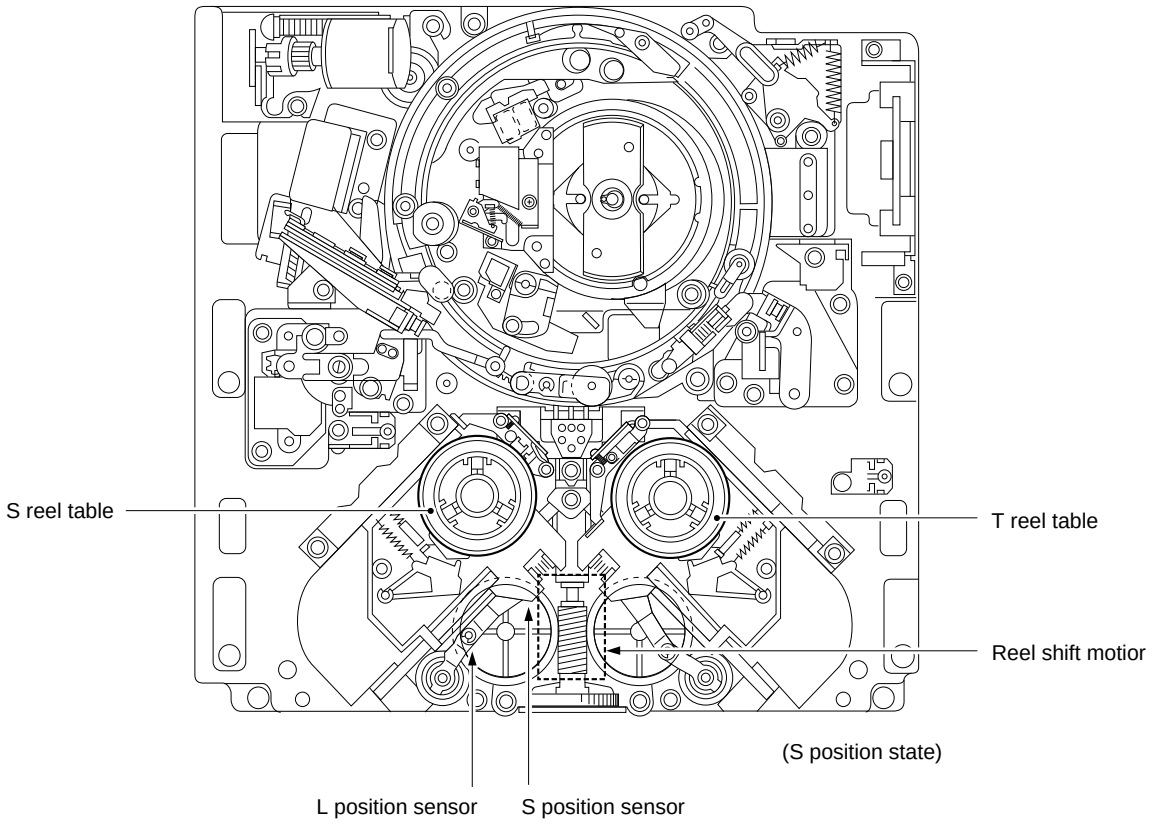
- For except S and L position

```
.........
```

In case of NG:

When the reel table operation is defective:
- Confirm that there is no mechanical abnormality.
- Check the reel shift motor drive circuit (DR-327 board or MS-54 board).
- Check the reel shift motor.

When the reel table is in the S position and L position but message “.....” is displayed:
- Check the S position sensor and L position sensor (PTC-71 board).
- Check the sensor input port of a CPU (MS-54 board).



< Upper-side view >

SV18 Pinch Roller Solenoid Check (Servo check command)

Function: Checks the function of a pinch roller solenoid.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted in this unit in this case.

(2) The threading operation is initiated. Wait until the threading operation is completed.

(3) Press the J key. Message "-ON" is then displayed on the screen.
Confirm that the pinch lever comes near the pinch roller and cracks when the pinch roller solenoid is turned on.

(4) Press the K key. Message "-OFF" is displayed on the screen.
Confirm that the pinch lever is released from the pinch roller and cracks when the pinch roller solenoid is turned off.

Note

During threading, message "(Push the Pinch Lever)" is displayed on the screen. In this case, return the pinch lever manually.

(5) To terminate a check, press the CTRL and C keys simultaneously.

∗ When the CTRL and C keys are pressed simultaneously, the solenoid automatically returns to the OFF state.

Examples:

• After threading is completed

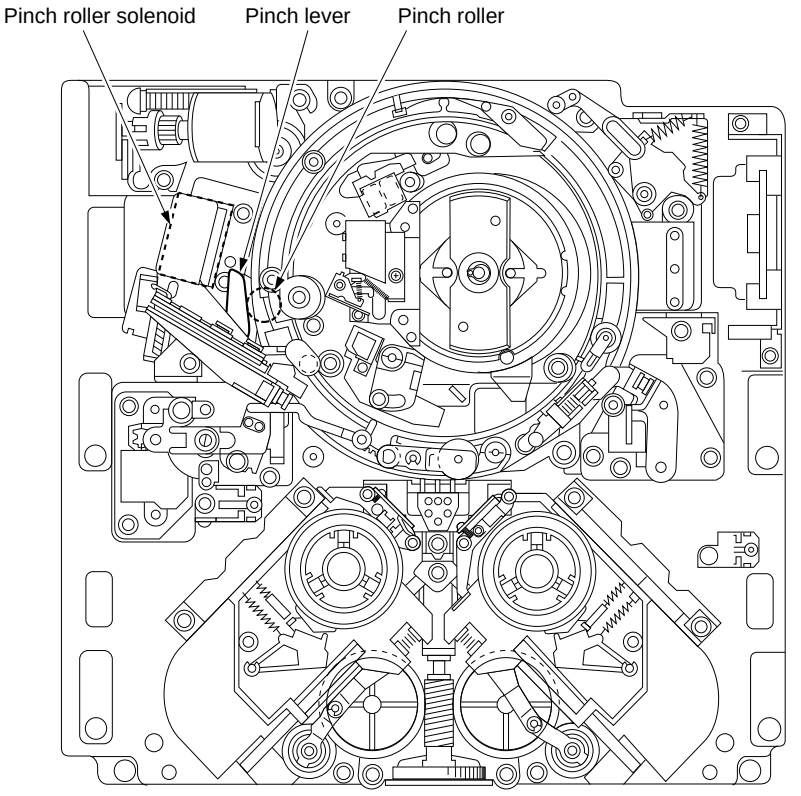
```
------>sv18
Servo Check [Plunger solenoid check]

  Pinch Roller Solenoid Check
   [KEY] CTRL-C=EXIT
              J=Solenoid-ON
              K=Solenoid-OFF

    Manual Check Start
     Pinch Roller Solenoid-OFF

  Exiting...
------>_
```

• Before threading is completed

```
------>sv18
Servo Check [Plunger solenoid check]

  Pinch Roller Solenoid Check
   [KEY] CTRL-C=EXIT
              J=Solenoid-ON
              K=Solenoid-OFF

    Manual Check Start
     Pinch Roller Solenoid-OFF   (Push the Pinch Lever)
```

In case of NG:

- Check the pinch solenoid drive circuit (DR-327 board).
- Check the pinch roller solenoid itself.



< Upper-side view >

(Thread end state)

SV19 S Reel Brake Solenoid Check (Servo check command)
SV1A T Reel Brake Solenoid Check (Servo check command)

Function: SV19: Checks the function of an S reel brake solenoid.
SV1A: Checks the function of a T reel brake solenoid.

Operation: The commands above are the same in operation.

(1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Press the J key. Message "-ON" is displayed on the screen. Confirm with a sound that the brake solenoid is turned on. (Brake off state)

(3) Press the K key. Message "-OFF" is displayed on the screen. As a result, the iron core of the brake solenoid returns to the former position. (Brake on state)

(4) To terminate a check, press the CTRL and C keys simultaneously.

∗ When the CTRL and C keys are pressed simultaneously, the solenoid automatically returns to the OFF state.

Examples:

• For SV19

```
------>sv19
Servo Check [Plunger solenoid check]

  S Reel Brake Solenoid Check
   [KEY] CTRL-C=EXIT
              J=Solenoid-ON
              K=Solenoid-OFF

    Manual Check Start
     S Reel Brake Solenoid-OFF

  Exiting...
------>_
```

• For SV1A

```
------>sv1a
Servo Check [Plunger solenoid check]

  T Reel Brake Solenoid Check
   [KEY] CTRL-C=EXIT
              J=Solenoid-ON
              K=Solenoid-OFF

    Manual Check Start
     T Reel Brake Solenoid-OFF

  Exiting...
------>_
```

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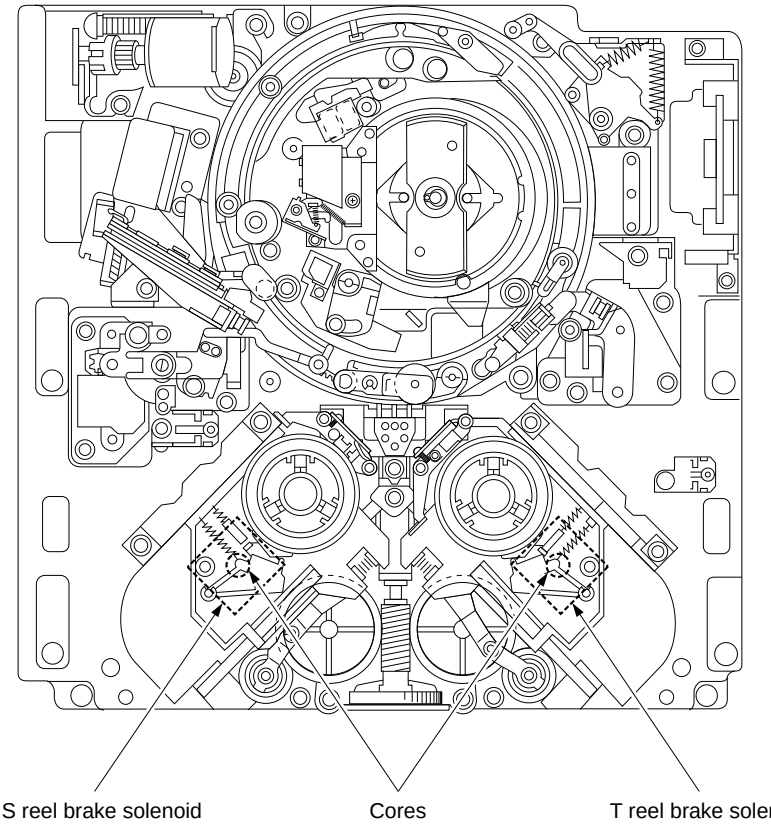
In case of NG:

For SV19 (S Reel Brake Solenoid Check)

- Check the S reel brake solenoid drive circuit (DR-327 board).
- Check the S reel brake solenoid itself.

For SV1A (T Reel Brake Solenoid Check)

- Check the T reel brake solenoid drive circuit (DR-327 board).
- Check the T reel brake solenoid itself.



<Upper-side view>

SV1B Cleaning Roller Solenoid Check (Servo check command)

Function: Checks the function of a cleaning roller solenoid.

Operation: (1) Enter command.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.

(2) Press the J key.
Confirm that the cleaning roller solenoid is activated and the cleaning roller touches the drum and then cleaning roller is detached from the drum after about one second.
The display on the screen appears as “-ON”, then returns to “-OFF”.

Note

The cleaning roller solenoid is burnt when it remains on for a long time. If the cleaning roller cannot be detached from the drum, turn off the power as soon as possible.

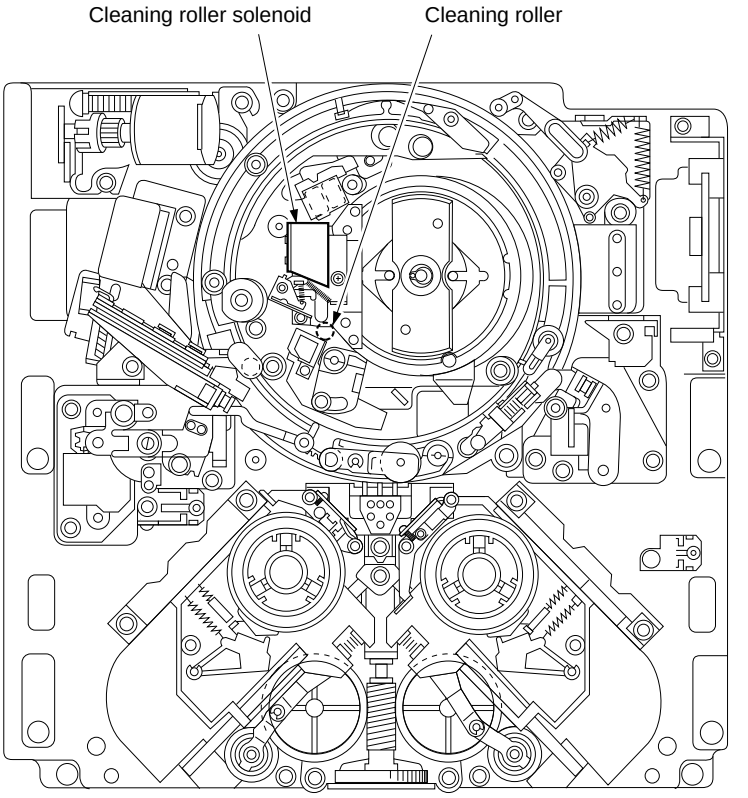
(3) To terminate a check, press the CTRL and C keys simultaneously.

Examples:

```
------>sv1b
Servo Check [Plunger solenoid check]

  Cleaning Roller Solenoid Check
   [KEY] CTRL-C=EXIT
              J=Solenoid-ON,then OFF

    Manual Check Start
     Cleaning Roller Solenoid-OFF

  Exiting...
------>_
```

In case of NG:

- Confirm that there is no mechanical abnormality.
- Check the cleaning roller solenoid drive circuit (DR-327 board).
- Check the cleaning roller solenoid itself.



< Upper-side view >

SV1C Reel/Capstan Motor & FG Check (Servo check command)

Function: Checks the following automatically and continuously.

- Operation of S reel FG and S reel motor
- Operation of T reel FG and T reel motor
- Operation of capstan FG and capstan motor
- S reel offset and friction
- T reel offset and friction
- S reel motor torque
- T reel motor torque

Operation: (1) Enter command.
After the title, the following message is then displayed on the screen.

```
Are you ready (y/n)?
```

∗ To stop the execution of check, press the N key.

(2) Press the Y key to initiate a continuous check.

∗ A cassette tape is automatically ejected when it has been inserted into this unit in this case.
∗ The continuous check cannot be stopped when it is initiated During continuous check, each check item is displayed sequentially.

(3) Message “ALL Check Complete” is displayed on the screen when the check succeeds. Message “# Abnormal Ended #” is displayed on the screen when the check fails. For the failure of check, refer to next page.

Examples:

- When the check succeeds

```
------>sv1c
Servo Check

  Reel/Capstan Motor & FG Check

   Are you ready (y/n)? Yes

  S Reel FG/Motor Check....OK
  T Reel FG/Motor Check....OK
  Capstan FG/Motor Check....OK
  S Reel offset/friction Check....OK
  T Reel offset/friction Check....OK
  S Reel Torque Check....OK
  T Reel Torque Check....OK

    ALL Check Complete

------>_
```

- When the check fails
(Example: S-Reel Toruque Check fails)

```
------>sv1c
Servo Check

  Reel/Capstan Motor & FG Check

   Are you ready (y/n)? Yes

  S Reel FG/Motor Check....OK
  T Reel FG/Motor Check....OK
  Capstan FG/Motor Check....OK
  S Reel offset/friction Check....OK
  T Reel offset/friction Check....OK
  S Reel Torque Check....NG

    # Abnormal Ended #

------>_
```

S Reel FG/Motor Check

Function: Checks the duty cycle of an S reel FG.

In case of NG:

Check the S reel motor (SV11). Readjust the S reel FG duty cycle (SV02) if no abnormality is found in the motor and drive circuit.

T Reel FG/Motor Check

Function: Checks the duty cycle of a T reel FG.

In case of NG:

Check the T reel motor (SV12). Readjust the T reel FG duty cycle (SV03) if no abnormality is found in the motor and drive circuit.

Capstan FG/Motor Check

Function: Checks the duty cycle of a capstan FG.

In case of NG:

Check the capstan motor (SV15). Readjust the capstan FG duty cycle (SV04) if no abnormality is found in the motor and drive circuit.

S Reel Offset/Friction Check

Function: Checks the offset and friction level of an S reel motor.

In case of NG:

Check the S reel motor (SV11). Readjust the S reel offset/friction (SV05) if no abnormality is found in the motor and drive circuit.

T Reel Offset/Friction Check

Function: Checks the offset and friction level of a T reel motor.

In case of NG:

Check the T reel motor (SV12). Readjust the T reel offset/friction (SV06) if no abnormality is found in the motor and drive circuit.

S Reel Torque Check

Function: Checks the torque of an S reel motor.

In case of NG:

Check the S reel motor (SV11). Readjust the S reel torque (SV07) if no abnormality is found in the motor and drive circuit.

T Reel Torque Check

Function: Checks the torque of a T reel motor.

In case of NG:

Check the T reel motor (SV12). Readjust the T reel torque (SV08) if no abnormality is found in the motor and drive circuit.

SV1D SAT Function Check (Servo check command)

Function: Checks the automatic tracking function automatically.

Operation: (1) Enter command.
After the title, the following message is then displayed on the screen.

```
Set YR5-1 (Alignment Tape)
 Are you ready (y/n/else=Eject)?
```

* To stop the execution of check, press the N key.
* To eject of cassette tape, press a key except Y and N.

(2) Insert alignment tape YR5-1 into this unit.

* Do not use tapes other than YR5-1. It is impossible to perform this adjustment properly in this case.
* To move the tape address during adjustment start, use the control software of GY-2120. (Refer to Section 1-10.)

(3) Press the Y key to initiate adjustment. Message “Auto Check Start” is displayed on the screen.

* Press the Y key without inserting a tape to display the message again.
* Message “(Tape end detected)” is displayed on the screen, rewind the tape to tape top, then check again.

(4) Message “Check Complete” is displayed on the screen when the check succeeds. Message “# Abnormal Ended #” is displayed on the screen when the check fails. For the failure of check, refer to In Case of NG on this page.

Examples:

• When the check succeeds

```
------>sv1d
Servo Check

  SAT Function Check

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

     Auto Check Start
       Check Complete

------>_
```

• When the check fails (Example)

```
------>sv1d
Servo Check

  SAT Function Check

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

     Auto Check Start
      # Spec Out REC Head PB Level #

------>_
```

In case of NG:

When “# Spec Out REC Head PB Level #” is displayed:
Check the following circuits.
• REC head PB circuit (EQ-66 board)
• Automatic tracking control circuit (Servo system on the MA-83 board)
Replace the drum assembly. (Refer to Section 3.)

When “# SAT Trouble #” is displayed:
Confirm that the playback tape is alignment tape YR5-1.
Readjust the servo adjustment commands (SV01, SV0A, and SV0B).
Check the following circuits.
• REC head PB circuit (EQ-66 board)
• Automatic tracking control circuit (Servo system on the MA-83 board)

SV1E Manual PG Adjustment (Servo adjustment command)

Function: Adjusts the PG manually.

Note

For the actual adjustment, an oscilloscope is required.

Operation: (1) Perform the oscilloscope setting and connection.

(2) Enter command.
After the title, the following message is then displayed on the screen.

```
Set YR2-1 (Alignment Tape)
  Are you ready (y/n/else=Eject)?
```

* To stop the execution of adjustment, press the N key.
* To eject of cassette tape, press a key except Y and N.

(3) Insert alignment tape YR2-1 into this unit.

* Do not use tapes other than YR2-1. It is impossible to perform this adjustment properly in this case.
* To move the tape address during adjustment start, use the control panel.

(4) Press the Y key.

* PG data (in hexadecimal) is displayed on the screen.
* Press the Y key without inserting a tape to display the message again.

(5) Press the H, J, K, and L keys to change data.
Observe the oscilloscope and change data until it meets the specifications.
H : Sets the PG data to +10h.
J : Sets the PG data to +1h.
K : Sets the PG data to −1h.
L : Sets the PG data to −10h.

(6) To terminate adjustment, press the CTRL and C keys simultaneously.

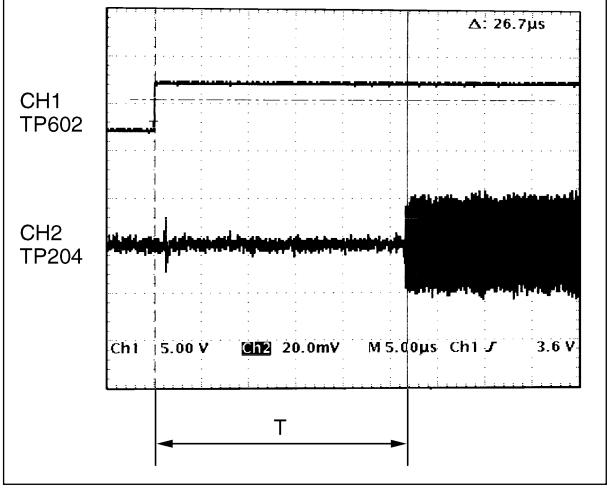
(7) To save adjustment data in the NV-RAM (Non-volatile RAM), execute command SV0C (Servo NV-RAM Save).

* After other servo adjustment, servo adjustment data can be collectively saved in the NV-RAM.

- Oscilloscope setting
  Vertical axis of CH1 = 5 V/DIV
  Vertical axis of CH2 = 20 mV/DIV
  Horizontal axis of CH1 = 5.0 µs/DIV
  Trigger = CH1

- Oscilloscope connection
  CH1: TP602/EQ-66 (E-4) 1/2VD
  CH2: TP204/EQ-66 (E-6) REC HEAD AC

- Specifications : T = 26.7 ± 2.0 µs



Example:

```
------>sv1e
Servo Adjust [Manual Adjust]

  Manual PG Adjustment

   Set YR2-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

  [KEY] CTRL-C=EXIT
             H=UP(FAST)
             J=UP(SLOW)
             K=DOWN(SLOW)
             L=DOWN(FAST)

     PG DATA:2249

  Exiting...
------>_
```

SV1F SV Initial Data Set (Servo check command)

Function: Set the initial adjustment data to the electronic volume for servo.

Operation: (1) Enter a command.

```
Are you ready (y/n)?
```

∗ To stop the execution of adjustment, press the N key.

(2) Press the Y key to initiate data transmission.
(3) After transmission is completed, messages below are displayed on the screen.
"Data Set"

Examples:

• For SV1F

```
------>sv1f
SV Adjust [NV-RAM Control]

  SV Initial Data Set

   Are you ready (y/n)? Yes

    Setting....OK

    Data Set

------>
```

- **Details of Copied SV Data**

As one area has capacity for 128 bytes (64 words), it is not fully written currently.
56 words are written from the top.
The following shows details of the copied data.

Before SV Ver. 1.05

offset	Data Name	Meaning
00h	MODE_ARR	Servo operation mode
02h	TIMER_ARR+2	Time passed from change in state to the current MODE/ARR. 416=1 second
04h	SV_MODE_CMD	Upper : C_BASE_MODE Lower : C_BASE_MR
06h	SV_MODE_CMD+2	Upper : C_BASE_MR+1 Lower : C_BASE_M2+2
08h	S_REEL_TORQ	S reel torque setting value
0Ah	T_REEL_TORQ	T reel torque setting value
0Ch	S_TENSION	S tension regulator output
0Eh	TAPE_DIR&TARUMI	Upper : TAPE_DIRECTION (Tape running direction) Lower : TARUMI_CMP_DATA (Limit value of number of times slack is detected continuously)
10h	TENSION_RATIO	Targetted tension in the reel mode
12h	S_TEN_TARGET	Targetted S tension value
14h	SFG_TARUMI	Number of S reel FGs in a certain period of time
16h	TFG_TARUMI	Number of T reel FGs in a certain period of time
18h	CFG_TARUMI	Number of capstan FGs in a certain period of time
1Ah	POWER_ON&TARUMI	Upper : POWER_ON_FLAG (Indicates that the power has just been turned ON) Lower : TARUMI_DET_CNT (Number of times slack was detected continuously)
1Ch	SLACK&SECH_FLAGS	Upper : SLACK_FLAG (Cause of slack) Lower : SECH_FLAG (Refer to Note 1)
1Eh	RS	S reel winding diameter
20h	RT	T reel winding diameter
22h	SRPHASES	Upper : SRPHASE (Total levels 0 : Less than 1 to 3, 1st to 3rd levels) Lower : SRPHASE_BUF (Previous SRPHASE)
24h	SORYO	Tape amount
26h	RBTE	Diameter at near top/end (Winding diameter at start of deceleration at the supply side)
28h	SURCTR&NO_REEL_FG	Upper : SURCTR (winding diameter measurement reliability, 0 to 3) Lower : NO_REEL_FG_CNT (counts the number of times reel FG was not detected)
2Ah	S_RUN	Distance moved by S reel tape within a certain period of time
2Ch	T_RUN	Distance moved by T reel tape within a certain period of time
2Eh	CAP_RUN	Distance moved by capstan against tape within a certain period of time
30h	S_RUN_BUF	Previous S_RUN
32h	T_RUN_BUF	Previous T_RUN
34h	TP_X_CMPN_DATA	X length correction value
36h	X_CMPN_DATA	Tracking control correction value by SAT
38h	X_CMPN_HOLD	X_CMPN_DATA hold value
3Ah	TRCON_DATA	Tracking control value
3Ch	RC_PH	REC CTL edge timing set to REC CTL generator
3Eh	RC_PH_OFFSET	Offset value requested from playback CTL error for regenerating the REC CTL

Note) SECH_FLAG b7:1=capstan 4FG interrupt occurred
b6: no use
b5: 1=speed changed (used for error detection)
b4: 1=speed changed (used for SV)
b3: 1=FG division ratio changed
b2: 1=required to drive against for breaking
b1: 1=actual direction equals to reference direction
b0: 1=ref.direction is FWD

offset	Data Name	Meaning
40h	TH_TIMERS	Upper : TH_MOTOR_TIMER (motor conduction time measured value) Lower : TH_FG_TIMER (Time it is not operating although power is supplied)
42h	TH_FG_NUMBER	Loading ring phase
44h	TH_FG_NUMBER_OLD	Previous loading ring phase
46h	T_TH_TARUMI	Distance moved by tape by loading ring during unthreading
48h	TARUMI	Slack amount of T reel during unthreading
4Ah	TH_FG_NUMBER_BAK	Previous loading ring phase
4Ch	T_FG_RDBUFF	Movement of T reel during threading
4Eh	T_FG_RDBUFF_PSET	Number of previous T reel FGs for detecting slack
50h	S_FG_RDBUFF	Movement of S reel during threading
52h	S_FG_RDBUFF_PSET	Number of previous S reel FGs for detecting slack
54h	SECH_FG_CTR&DIV	Upper : SECH_FG_CTR (count when no capstan FG) Lower : CAP_4FG_DIV (frequency division ratio of capstan FG)
56h	SECH_PWM_DATA	Capstan PWM output
58h	CAP_NOR_BIAS_DATA	Capstan phase loop output
5Ah	CAP_CONT_SPEED	Table speed obtained from capstan FG count
5Ch	SECH_SP_REF	Tape targetted speed
5Eh	SECH_SP_REF2	SECH_SP_REF filtered
60h	CAP_4FG_SP	Tape speed sought by calculating the capstan FG period by the clock
62h	NOR_PB_CTL_ERR	CTL error during play
64h	SECH_MOD&CTL_STS	Upper : SECH_MOD (b0 : 1 SV determines the speed 0 SY) Lower : PB_CTL_PH_STATUS (b1=1&b0=0 : CTL lock)
66h	SAT_A_ENV_DATA	SAT signal A/D conversion value
68h	C_LONG_CUEUP&AVE	Upper : C_LONG_CUEUP (Clears past SAT data at !=0) Lower : RF_AVE_COUNT (Number of time 1st level was executed)
6Ah	C_EDIT_MODE&STS	Upper : C_EDITT_MODE Lower : C_SV_STATUS+2 (b4:drum lock, b5:cap lock)
6Ch	SAT_FLAGS	Upper : SAT_CNT_EN_FLG+2 (Climbing permitted at b0:0) Lower : SAT_1ST_ONLY_FLG+1
6Eh	SAT_FLAGS2	Upper : SAT_1ST_STG_FIN_FLG+1 (1st level ends at b0:1) Lower : SAT_OPEN_CNT_FLG
70h	SAT_ERR_FLG	Upper : Not used Lower : SAT_ERR_FLG (b0:X length correction failed) b1:rec head clog)
72h	Dummy data	Constant 9876h. Indicates not used.
74h	Dummy data	Constant 9876h. Indicates not used.
76h	Dummy data	Constant 9876h. Indicates not used.
78h	Dummy data	Constant 9876h. Indicates not used.
7Ah	Dummy data	Constant 9876h. Indicates not used.
7Ch	Dummy data	Constant 9876h. Indicates not used.
7Eh	Dummy data	Constant 1234h. Used in place of marker.

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From SV Version 1.06 onwards

Note

Only the following are changed for the table before SV Ver.1.05

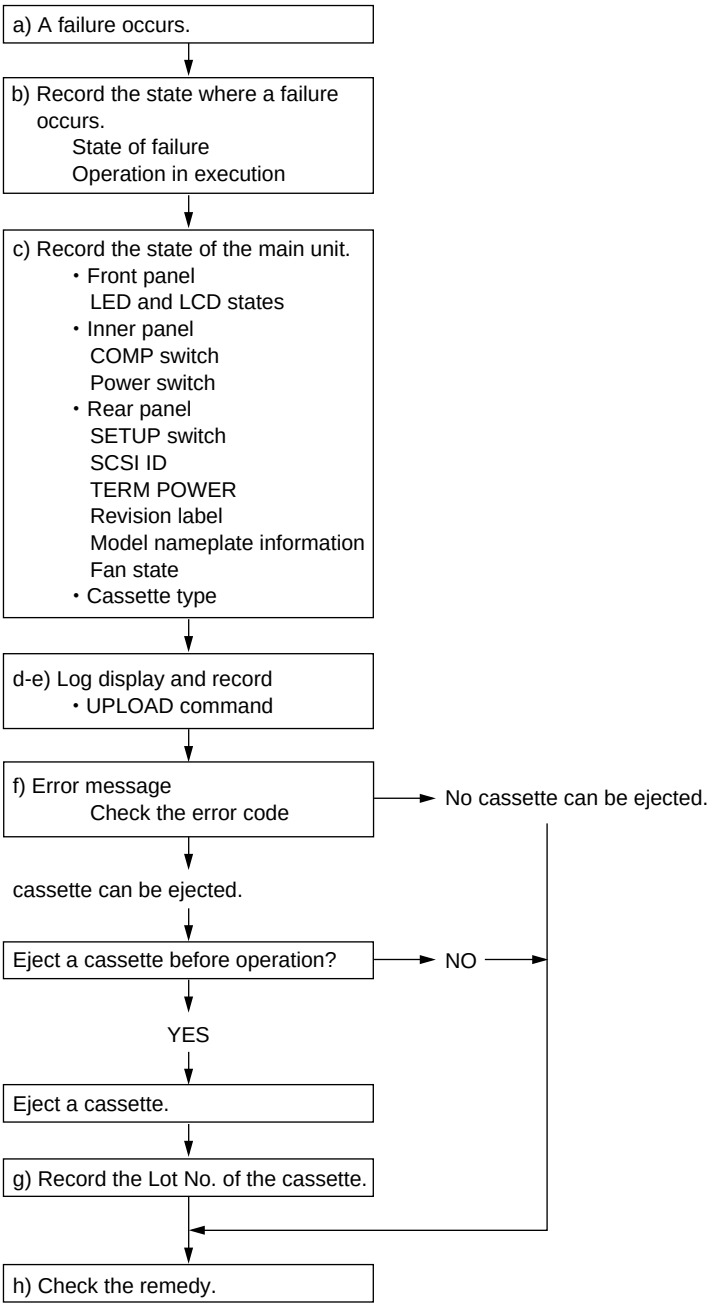
offset	Data Name	Meaning
62h	SECH_MOD	
63h	C_SVLOCK	Other than 0:Servo lock
64h	C_KINDOFTAPE	Tape type status
65h	C_THREAD_STA	Cassette compartment/threading status
66h	C_TAPE	Tape information (RECINHI, etc.)
67h	C_PINCHON	Other than 0:Pinch ON
68h	S_REEL_PWM_H_BUF	S reel drive parameter (Upper)
6Ah	S_REEL_PWM_L_BUF	S reel drive parameter (Lower)
6Ch	T_REEL_PWM_H_BUF	T reel drive parameter (Upper)
6Eh	T_REEL_PWM_L_BUF	T reel drive parameter (Lower)
70h	C_SV_STATUS	Capstan information (Other than bit0 0:Capstan stop)
71h	C_SV_STATUS+2	Servo lock information (Other than bit5 0:Capstan lock Other than bit4 0:Drum lock)
72h	MANU_AJ_DATA	Capstan FG duty A adjustment value
73h	MANU_AJ_DATA+2	Capstan FG duty B adjustment value
74h	MANU_AJ_DATA+4	S reel FG duty A adjustment value
75h	MANU_AJ_DATA+6	S reel FG duty B adjustment value
76h	MANU_AJ_DATA+8	T reel FG duty A adjustment value
77h	MANU_AJ_DATA+10	T reel FG duty B adjustment value
78h	SCI_IN0+1	SV microprocessor<-DR microprocessor communication status 1
79h	SCI_IN0+2	SV microprocessor<-DR microprocessor communication status 2
7Ah	SCI_IN0+3	SV microprocessor<-DR microprocessor communication status 3
7Bh	SCI_IN0+4	SV microprocessor<-DR microprocessor communication status 4
7Ch	SCI_OUT0+1	SV microprocessor->DR microprocessor communication status 1
7Dh	SCI_OUT0+2	SV microprocessor->DR microprocessor communication status 2
7Eh	SCI_OUT0+3	SV microprocessor->DR microprocessor communication status 3
7Fh	SCI_OUT0+4	SV microprocessor->DR microprocessor communication status 4

6-3. Error Processing

When the GY-2120 under the normal operation detects a trouble, then displays the error message and error code on the LCD.
In this section, explains the error messages, error codes, and their remedies.

6-3-1. Troubleshooting

Perform the operation below when a failure occurs in the GY-2120. If you have any questions, consult a Sony service facility.



• The actual procedure is described below.

a) Check the occurrence of a failure.

b) Record the type of operation during which a failure occurs and the type of a failure to occur.

Operation in execution
State of failure

c) Record the state of the main unit.

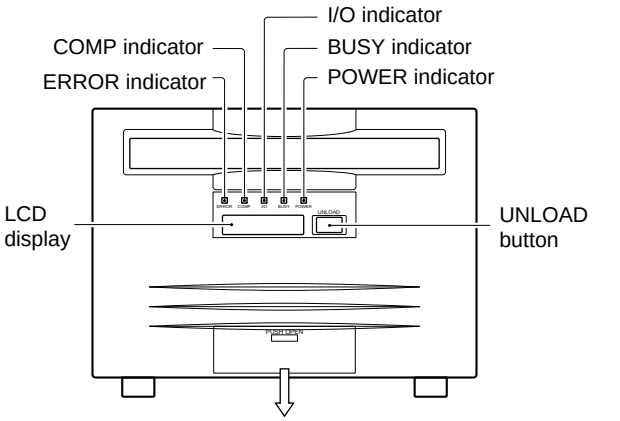
<Front panel>

• Indicator (LED) state
  * ERROR indicator (red)
    □ Lights. □ Goes off.
  * COMP indicator (orange)
    □ Lights. □ Blinks. □ Goes off.
  * I/O indicator (green)
    □ Lights. □ Blinks. □ Goes off.
  * BUSY indicator (orange)
    □ Lights. □Blinks. □ Goes off.
  * POWER indicator (green)
    □ Lights. □ Goes off.

• State of display block
  (LCD) <16 digits × 1 line (5 dots × 8 dots) >
  Displayed characters (information)
• Inner panel state
  * Power switch
    ON or OFF
  * COMP switch
    SCSI, ON, or OFF
  • Type of inserted cassette
    L cassette (GW-730L) or
    S cassette (GW-240S)

Record the lot number at the back of a cassette when the tape was ejected according to step f).

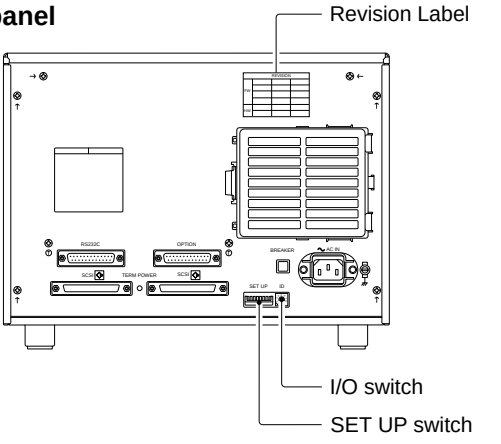
Front panel



<Rear panel>

* SETUP switch
  ON or OFF
* SCSI ID
  0 to F
* TERM POWER indicator
  □ Lights. □ Goes off.
* Information described on revision label
  Total revision of firmware and hardware
* Model nameplate information
  Serial No. of main unit, and model type
* Fan state
  Check that the fan operates properly.

Rear panel



d) Display a log.

1. Connect the unit to a personal computer (PC) referring to section 6-1-1.
   Note
   For the setting of the communication baud rate of the GY-2120, refer to section 6-2-5.

2. Display a log referring to section 6-2-2.
   Log required: Upload command “Upload”

e) Store the contents of a log.

Note

Follow the procedure of terminal emulator software incorporated into the personal computer when storing the contents of a log in a floppy disk or personal computer (hard disk).

f) Eject a cassette.

For cassette ejection to protect the tape, view the error message (refer to section 6-3-1) and error code (refer to section 6-3-2) on the display (LCD) to check whether the case can be ejected.

For how to eject the cassette, refer to the operation (cassette insertion/eject - urgent eject) in the Operation Manual.

1. When a cassette can be ejected
   The error codes in which a cassette can be taken out by an urgent eject are as follows:

   0001, 0002, 0003, 0004, 0005, 0006, 0007, 0008, 0009, 000C, 000D, 0013, 1x1B, 1x1C, 1x1F, 1x23, 1x24, 1x25, 1x26, 1x3B, 1x3C, 1x3D, 1x41, 1x42, 1x43, 1x44, 1x47, 1x5B, 1x7A, 1x7B, 1x7C, 1x7E, 1x7F, 1XCY, 1xDA, 1xDD

2. When no cassette is ejected
   The tape may be damaged when the error codes below are displayed. Do not eject the tape at that time. Moreover, do not turn on the power again in this case. The tape may be damaged. (Refer to section 6-3-3.)

   2x01, 2x02, 2x03, 2x04, 2x05, 2x06, 2x07, 2x08, 2x09, 2x0A, 2x10, 2x11, 2x12, 2x13, 2x14, 2x20, 2x21, 2x22, 2x91, 2x93, 2x94, 2x97

g) Record the lot number of a cassette.

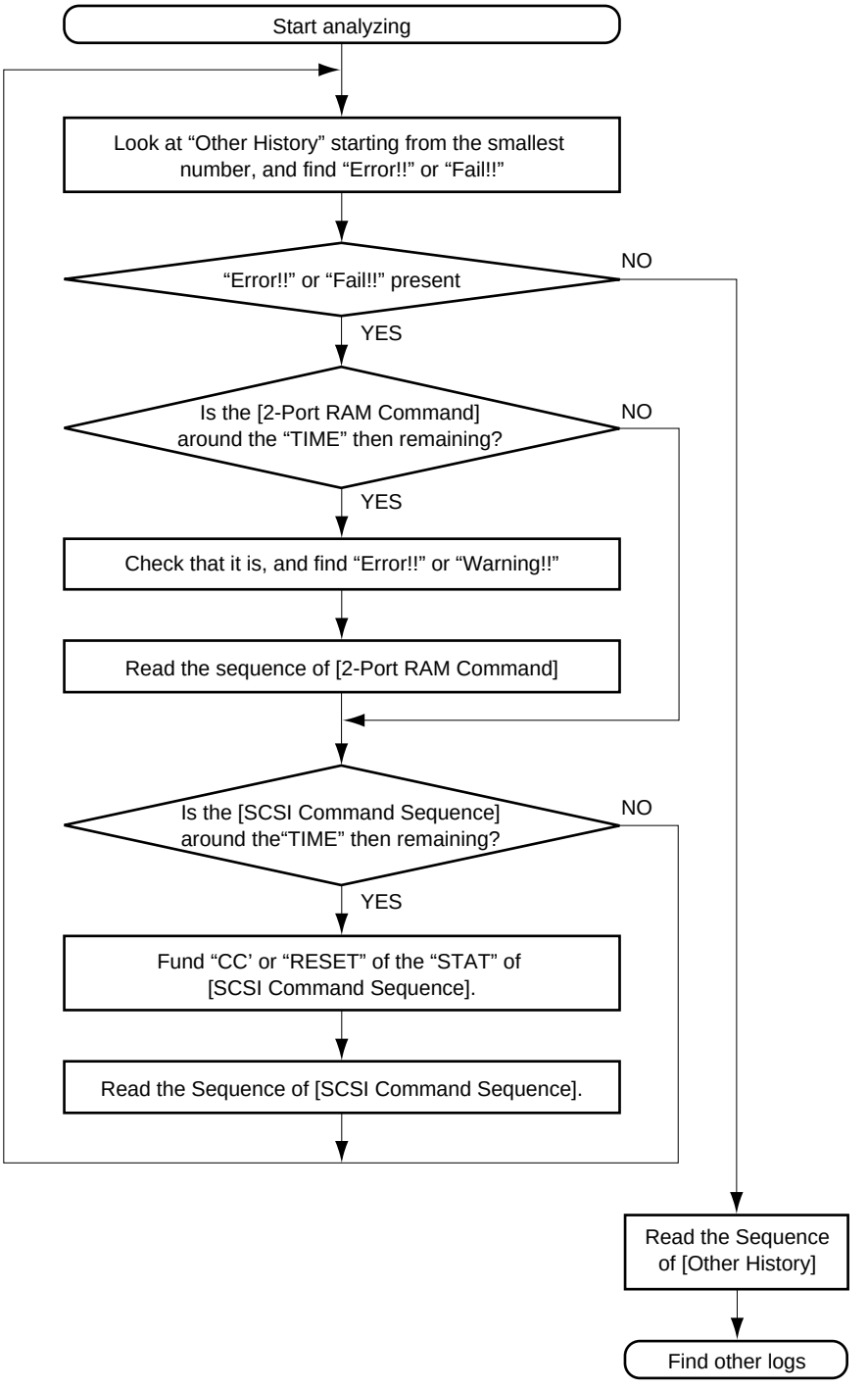
Check the error code and record the lot number at the back of a cassette when the tape is ejected.

h) Check the remedy.

Refer to sections 6-3-1 and 6-3-2. Check the remedy to be taken according to the error message and error code displayed on the LCD of the front panel.

6-3-2. Analyzing Logs

a) Procedure for Analyzing Logs in GY-2120


Start analyzing
Look at “Other History” starting from the smallest number, and find “Error!!” or “Fail!!”
“Error!!” or “Fail!!” present
NO
YES
Is the [2-Port RAM Command] around the “TIME” then remaining?
NO
YES
Check that it is, and find “Error!!” or “Warning!!”
Read the sequence of [2-Port RAM Command]
Is the [SCSI Command Sequence] around the“TIME” then remaining?
NO
YES
Fund “CC’ or “RESET” of the “STAT” of [SCSI Command Sequence].
Read the Sequence of [SCSI Command Sequence].
Read the Sequence of [Other History]
Find other logs

∗ For details on analyzing other logs, refer to the example on analyzing the SCSI LOG and SYS/SV LOG.

<LOG Analysis Example 1>

Method of analyzing when “Read>1124” occurs on the LCD

At the end of 2-PORT COMMAND LOG
Find ERROR!! parm [00000000 : 00000000 : 00000000] err [00000124].

```
No..TIME......STATUS..CMD..INFORMATION.....................................BOOT
120  009A0BEC  [RCV 5]  01  ID   [121905]  len[    0]  eod[    0] rty[  0]  000BF
              ERROR!!      parm[00000000:00000000:00000000] err[00000124]
121  009A0BEC  [FRE 5]                                                      000BF
122  009A0C65  [FRE 6]                                                      000BF
123  009A0CD6  [FRE 7]                                                      000BF
124  009A0D4F  [FRE 0]                                                      000BF
125  009A1390  [FRE 1]                                                      000BF
126  009A17A9  [FRE 2]                                                      000BF
127  009A19A2  [FRE 3]                                                      000BF
128  009A1A93  [FRE 4]                                                      000BF
```

As err [00000124] has generated at No. 120, the LCD should become 1x24.
As CMD is 01, x is substituted by 1, and the LCD becomes 1124. As it corresponds with the actual message on the LCD, this error is the cause.

As CMD 01 is Read and err [00000124] is Unlock Inpoint (Servo Unlock Error near IN point), Servo Unlock occurred near ID [121905] on the tape.

Look at the last Syscon Status Mode Log

```
Syscon Status Mode Logger Display
Logger mem pointer :  Log No.   : status
log_rp = 00001B00  :  No = 01C8 : 80 A0 40 01 00 40 07 04     ← 1st Read
log_rp = 00001B08  :  No = 01C9 : 28 00 17 00 01 4D F3 00
log_rp = 00001B10  :  No = 01CA : 00 00 00 00 00 00 80 80
log_rp = 00001B18  :  No = 01CB : 80 80 80 80 80 80 80 80
log_rp = 00001B20  :  No = 01CC : 6B 6F 7B 7E 00 00 00 C0
log_rp = 00001B28  :  No = 01CD : FF FF 99 96 00 00 00 00
log_rp = 00001B30  :  No = 01CE : 5B 51 78 78 67 74 4F 47
log_rp = 00001B38  :  No = 01CF : 70 7C 68 60 00 00 00 00
log_rp = 00001B40  :  No = 01D0 : 80 A0 40 01 00 40 07 04     ← 1st Read
log_rp = 00001B48  :  No = 01D1 : 28 00 17 00 01 4D F3 00
log_rp = 00001B50  :  No = 01D2 : 00 00 00 00 00 00 80 80
log_rp = 00001B58  :  No = 01D3 : 80 80 80 80 80 80 80 80
log_rp = 00001B60  :  No = 01D4 : 6B 6F 7B 7E 00 00 00 C0
log_rp = 00001B68  :  No = 01D5 : FF FF 99 96 00 00 00 00
log_rp = 00001B70  :  No = 01D6 : 5B 51 78 78 67 74 4F 47
log_rp = 00001B78  :  No = 01D7 : 70 7C 68 60 00 00 00 00
log_rp = 00001B80  :  No = 01D8 : 80 A0 40 01 00 40 07 04     ← 2nd Retry
log_rp = 00001B88  :  No = 01D9 : 28 00 17 00 01 4D F3 00
log_rp = 00001B90  :  No = 01DA : 00 00 00 00 00 00 80 80
log_rp = 00001B98  :  No = 01DB : 80 80 80 80 80 80 80 80
log_rp = 00001BA0  :  No = 01DC : 6B 6F 7B 7E 00 00 00 C0
log_rp = 00001BA8  :  No = 01DD : FF FF 99 96 00 00 00 00
log_rp = 00001BB0  :  No = 01DE : 5B 51 78 78 67 74 4F 47
log_rp = 00001BB8  :  No = 01DF : 70 7C 68 60 00 00 00 00
log_rp = 00001BC0  :  No = 01E0 : 80 A0 40 01 00 40 07 04     ← 3rd Retry
log_rp = 00001BC8  :  No = 01E1 : 28 00 17 00 01 4D 80 00
log_rp = 00001BD0  :  No = 01E2 : 00 00 00 00 00 00 80 80
log_rp = 00001BD8  :  No = 01E3 : 80 80 80 80 80 80 80 80
log_rp = 00001BE0  :  No = 01E4 : 6B 6F 7B 7E 00 00 00 C0
log_rp = 00001BE8  :  No = 01E5 : FF FF 99 96 00 00 00 00
log_rp = 00001BF0  :  No = 01E6 : 5B 51 78 78 67 74 4F 47
log_rp = 00001BF8  :  No = 01E7 : 70 7C 68 60 00 00 00 00
log_rp = 00001C00  :  No = 01E8 : 80 A0 40 01 00 40 07 04     ← 4th Retry
log_rp = 00001C08  :  No = 01E9 : 28 00 17 00 01 4D F3 00
log_rp = 00001C10  :  No = 01EA : 00 00 00 00 00 00 80 80
log_rp = 00001C18  :  No = 01EB : 80 80 80 80 80 80 80 80
log_rp = 00001C20  :  No = 01EC : 6B 6F 7B 7E 00 00 00 C0
log_rp = 00001C28  :  No = 01ED : FF FF 99 96 00 00 00 00
log_rp = 00001C30  :  No = 01EE : 5B 51 78 78 67 74 4F 47
log_rp = 00001C38  :  No = 01EF : 70 7C 68 60 00 00 00 00
log_rp = 00001C40  :  No = 01F0 : 80 A0 40 01 00 40 07 04     ← 5th Retry
log_rp = 00001C48  :  No = 01F1 : 28 00 17 00 01 4D F3 00
log_rp = 00001C50  :  No = 01F2 : 00 00 00 00 00 00 80 80
log_rp = 00001C58  :  No = 01F3 : 80 80 80 80 80 80 80 80
log_rp = 00001C60  :  No = 01F4 : 6B 6F 7B 7E 00 00 00 C0
log_rp = 00001C68  :  No = 01F5 : FF FF 99 96 00 00 00 00
log_rp = 00001C70  :  No = 01F6 : 5B 51 78 78 67 74 4F 47
log_rp = 00001C78  :  No = 01F7 : 70 7C 68 60 00 00 00 00
```

No = the 2 bytes on the right of xxx0, xxx8 are the Abort Reason Code.

The Abort Reason Code 07 04 are OVER PRE-IN POINT. (passed the Pre IN point)

Presumed causes

1. Excess CTL pulses were output, and stepped the value after the Pre IN point.

2. The CTL pulse became faulty and stepping could not be performed. When CTL recovered and was aligned to LTC, it was corrected to the value just after the Pre IN point.

3. LTC incontinuous recording.

<LOG Analysis Example 2>

Method of analyzing when “Prewrite>1324” occurs on the LCD

At the end of 2-PORT COMMAND LOG
Find ERROR!! Parm [00000000 : 00000000 : 00000000] err [00000124].

```
No..TIME......STATUS..CMD..INFORMATION.....................................BOOT

88  04E7C066    [SND 7]  03  mode[00000000]          ID [ 16617]          00062
                          len [    10] num [   1] rst[    0] rty[ 5]
89  04E7DA86   [RCV 7]  03  ID   [ 16617] len [   0] eod[    0] rty[ 0]   00062
              ERROR!!       parm [00000000:00000000:00000000] err [00000124]
```

As err [00000124] has generated at No. 89, the LCD should become 1x24.
As CMD is 03, x is substituted by 3, and the LCD becomes 1324. As it corresponds with the actual message on the LCD, this error is the cause.

As CMD 03 is single Read and err [00000124] is Unlock Inpoint (Servo Unlock Error near IN point), Servo Unlock occurred near ID [16617] on the tape.

Look at the last Syscon Status Mode Log

```
Syscon Status Mode Logger Display
Logger mem pointer :  Log No.   : status
log_rp = 00001540  :  No = 01C8 : 80 A0 40 01 00 00 07 01     ← 1st Read
log_rp = 00001548  :  No = 01C9 : 28 00 17 00 01 6C 80 00
log_rp = 00001550  :  No = 01CA : 00 00 00 00 00 00 80 80
log_rp = 00001558  :  No = 01CB : 80 80 80 80 80 80 80 80
log_rp = 00001560  :  No = 01CC : 72 76 74 75 00 00 00 C0
log_rp = 00001568  :  No = 01CD : FF FF 95 99 00 00 00 00
log_rp = 00001570  :  No = 01CE : 55 59 7C 80 6B 74 50 59
log_rp = 00001578  :  No = 01CF : 78 7C 55 5C 00 00 00 00
log_rp = 00001580  :  No = 01D0 : 80 A0 40 01 00 00 07 01     ← 1st Read
log_rp = 00001588  :  No = 01D1 : 28 00 17 00 01 6C 80 00
log_rp = 00001590  :  No = 01D2 : 00 00 00 00 00 00 80 80
log_rp = 00001598  :  No = 01D3 : 80 80 80 80 80 80 80 80
log_rp = 000015A0  :  No = 01D4 : 72 76 74 75 00 00 00 C0
log_rp = 000015A8  :  No = 01D5 : FF FF 95 99 00 00 00 00
log_rp = 000015B0  :  No = 01D6 : 55 59 7C 80 6B 74 50 59
log_rp = 000015B8  :  No = 01D7 : 78 7C 55 5C 00 00 00 00
log_rp = 000015C0  :  No = 01D8 : 80 A0 40 01 00 00 07 01     ← 2nd Retry
log_rp = 000015C8  :  No = 01D9 : 28 00 17 00 01 6C 80 00
log_rp = 000015D0  :  No = 01DA : 00 00 00 00 00 00 80 80
log_rp = 000015D8  :  No = 01DB : 80 80 80 80 80 80 80 80
log_rp = 000015E0  :  No = 01DC : 72 76 74 75 00 00 00 C0
log_rp = 000015E8  :  No = 01DD : FF FF 95 99 00 00 00 00
log_rp = 000015F0  :  No = 01DE : 55 59 7C 80 6B 74 50 59
log_rp = 000015F8  :  No = 01DF : 78 7C 55 5C 00 00 00 00
log_rp = 00001600  :  No = 01E0 : 80 A0 40 01 00 00 07 01     ← 3rd Retry
log_rp = 00001608  :  No = 01E1 : 28 00 17 00 01 6C 80 00
log_rp = 00001610  :  No = 01E2 : 00 00 00 00 00 00 80 80
log_rp = 00001618  :  No = 01E3 : 80 80 80 80 80 80 80 80
log_rp = 00001620  :  No = 01E4 : 72 76 74 75 00 00 00 C0
log_rp = 00001628  :  No = 01E5 : FF FF 95 99 00 00 00 00
log_rp = 00001630  :  No = 01E6 : 55 59 7C 80 6B 74 50 59
log_rp = 00001638  :  No = 01E7 : 78 7C 55 5C 00 00 00 00
log_rp = 00001640  :  No = 01E8 : 80 A0 40 01 00 00 07 01     ← 4th Retry
log_rp = 00001648  :  No = 01E9 : 28 00 17 00 01 6C 80 00
log_rp = 00001650  :  No = 01EA : 00 00 00 00 00 00 80 80
log_rp = 00001658  :  No = 01EB : 80 80 80 80 80 80 80 80
log_rp = 00001660  :  No = 01EC : 72 76 74 75 00 00 00 C0
log_rp = 00001668  :  No = 01ED : FF FF 95 99 00 00 00 00
log_rp = 00001670  :  No = 01EE : 55 59 7C 80 6B 74 50 59
log_rp = 00001678  :  No = 01EF : 78 7C 55 5C 00 00 00 00
log_rp = 00001680  :  No = 01F0 : 80 A0 40 01 00 00 07 01
log_rp = 00001688  :  No = 01F1 : 28 00 17 00 01 6C F3 00
log_rp = 00001690  :  No = 01F2 : 00 00 00 00 00 00 80 80
log_rp = 00001698  :  No = 01F3 : 80 80 80 80 80 80 80 80
log_rp = 000016A0  :  No = 01F4 : 72 76 74 75 00 00 00 C0
log_rp = 000016A8  :  No = 01F5 : FF FF 95 99 00 00 00 00
log_rp = 000016B0  :  No = 01F6 : 55 59 7C 80 6B 74 50 59
log_rp = 000016B8  :  No = 01F7 : 78 7C 55 5C 00 00 00 00
```

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No = the 2 bytes on the right of xxx0,xxx8 are the Abort Reason Code
Abort Reason Code 07 01

Details of Abort_code=7 Sub_code

01: Servo unlock at Pre_in
(Could not Servo lock until just before IN point 6ID)
02: D-READY miss
(Could not determine IDR until just before IN point 6ID)
03: servo unlock after D-READY
(Became Servo Unlock to the IN point after D-READY was output)
04: Pre_in not found
(Could not detect before 6ID of the IN point, and passed through)

Presumed causes

ARC 7-1

1. SAT causes
    Problems during recording
        Ach, unrecorded, drop in level
            REC Ach. Clog
        SAT signal unrecorded
    Playback problems
        Drop in SAT signal playback level
            REC Ach. clog

2. CTL causes
    CTL Head Clog

3. Servo causes

As retry by Servo Unlock is normally carried out 5 times, servo is generated 6 times including that generated by the first read.

Differentiating the causes

Look at the signal recording state of Ach. using the Syscom Time Code Log.
As only the last 767ID remains for the Syscon Time Code Log, check with the 2-Port Log if the following CMDs were executed after ERROR!! occurred.

Continuous Read (01) CMD
Continuous Write (02) CMD
Single Read (03) CMD
Long search (19) CMD

```
>>>>>>>>>>>>>>>>>>>>>>>>>[ 2-PORT COMMAND LOG ]<<<<<<<<<<<<<<<<<<<<<<<<<
<<<< Log Count : 128 >>>>
 No..TIME......STATUS..CMD..INFORMATION.....................................BOOT

 89  04E7DA86  [RCV 7]  03  ID  [ 16617]  len [   0]  eod [    0]  rty [ 0]  00062
               ERROR!!      parm[00000000:00000000:00000000] err[00000124]

111  04E86107  [RCV 0]  02  ID  [  1720]  len [ 280]  eod [    0]  rty [ 0]  00062
                           parm[00000000:00000000:00000000]

113  04E86300  [RCV 1]  02  ID  [  2000]  len [ 500]  eod [    0]  rty [ 0]  00062
                           parm[00000000:00000000:00000000]

119  04E86428  [RCV 1]  19  ID  [  2252]  len [ 252]  eod [    0]  rty [ 0]  00062
                           parm[00000000:00000000:00000000]
```

len[280] + len[500] + len[252] = 1032ID > 767ID
Therefore, the Syscom Time Code Log when ERROR!! occurred does not remain.

```
Syscon Time Code Logger Display
Logger mem pointer : Log No.   :  Sys ID   R/W Len  R6 TCR      TCR  UB
                                        PB_ENV_LEVEL
                                              ↓
log_rp = 0000DA80  :  No = 0000  :  00000743 00FF0012 28 00003029 00000000
                                     ↑
                                   ID
log_rp = 0000DA90  :  No = 0001  :  00003026 0600001F 00 75747672 046F0902
log_rp = 0000DAA0  :  No = 0002  :  010A0A0A 070F0010 00 00000001 00000000
                                              ↑
                                   Correction ability
log_rp = 0000DAB0  :  No = 0003 : FF0A0A0A D0D0D000 00 F8FCFCD0 B2FFFFF9
                                        ↑ ↑ ↑              ↑
                                      C,B,A                D
```

ID:　　0x00000743 = ID 1859
Correction ability:Writing 0A0A0A
(Write is 0A0A0A, read is 1A1A1A)
The Confi. Head state can be known during write.

C1 is the number of normally corrected blocks (total 208)
A : Ach. 0xD0 = 208
B : Bch. 0xD0 = 208
C : Cch. 0xD0 = 208
D : Cch. 0xD0 = 208

C1 means that all channels are normal.

PB_ENV_LEVEL: 0xFF = 11 11 11 11(2)
A, B, C, D ch.

RF PB Envelope Level

A:Ach. 11(2) = 3 = (80 to 100 %)
B:Bch. 11(2) = 3 = (80 to 100 %)
C:Cch. 11(2) = 3 = (80 to 100 %)
D:Cch. 11(2) = 3 = (80 to 100 %)

; 3:80 to 100 %
; 2:60 to less than 80%
; 1:40 to less than 60%
; 0:00 to less than 40%

Envelope Level also means that all channels are normal.

No problems are found with all IDs remaining in the Time Code Log.

It is necessary to analyze near ID [16617] with the tape.

<LOG Analysis Example 3>

1) Check the LED and CLD of the GY-2120 front panel.

1-1) LED

Name	ERROR	COMP.	I/O	BUSY	POWER
Color	RED	ORANGE	GREEN	ORANGE	GREEN
Status	ON	ON	OFF	OFF	ON

As ERROR is lit, problems have occurred in GY-2120.

1-2) LCD

[E]Unload >1D3D

Check the contents with the maintenance manual.

Error messages

[E] Unload > xxxx Failed in unloading.

Error code

1x3D An area not recorded with CTL was found.

Action (Cause of error)

Clean the tape running system
Or replace the EQ-66 board.

2) Acquire the GY-2120 LOG.

Connect the PC to the RS232C connector.

If already connected, acquire the display remaining on the RS232C terminal.

Example of when using the Windows95 hyper terminal

In the hyper terminal:

Edit, All select, Copy

Open another file

Edit, Paste Acquired to the rs232c.txt

Type ROM.

```
ROM
*** [ ROM VERSION DISPLAY ]  ***

[FW Rev]  GY1.00-B

[SCSI]   1.14
[SYS]    1.08 B30
[IF]     1.06
[SV]     1.08 B01
[EQ]     1.40
[DR]     1.00
```

If revision GY1.00 and below is displayed at [FW Rev], acquire LOG as follows.

[Procedure for Acquiring LOG]

For GY2120 [FW Rev] revision GY1.00 and below, acquire LOG as follows. For other items, the method may be slightly different.

1) Connecting the D-sub 25pin connector

Connect the connector labeled RS232C on the rear panel.

2) Setting the communication procedure

8bit, Non Parity, 1Stop Bit, no flow control

Baud rate

Rear Panel Setup Switch 8

OFF (Upper side) Fixed at 9600 [bit/s]

ON (Lower side) 2400 to 38400 [bit/s] variable
Normally 38400 [bit/s]

Note

When the screen saver and power management operate, LOG data may be missing. Set so that the standby time till execution is more than 30 minutes.

Data may also be missing for 38400 [bit/s] according to the PC used.

3) Acquiring LOG (Refer to Section 6-2-2. Log Display Mode).
←←← indicates where to input keys

[Set the PC to the LOG acquisition mode]

For Windows95 hyper terminal

Transfer Text capture Reference
Select capture file (Right click)
Create Text document (Specify the file name)
Start

LOG ←←←

LOG => upload ←←←

[LOG will be displayed for several minutes]

```
59  00001025  Maintenance Monitor Used   0009C
      Command[9] fLoad[1] fActMode[0] Rsv[0]
60  00001200  Maintenance Monitor Used   0009C
      Command[4] fLoad[1] fActMode[0] Rsv[0]
61  00015576  Maintenance Monitor Used   0009D
      Command[9] fLoad[1] fActMode[0] Rsv[0]
62  00015786  Maintenance Monitor Used   0009D
      Command[2] fLoad[312E3030] fActMode[41300104] Rsv[0]
63  0001867D  Maintenance Monitor Used   0009D
      Command[9] fLoad[1] fActMode[0] Rsv[0]
64  00018AEE  Maintenance Monitor Used   0009D
      Command[2] fLoad[312E3030] fActMode[41300104] Rsv[0]
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>[ Serial LOG ]<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
```

```
<<<< Log Count :      0 >>>>
LOG DOES NOT EXIST

         LOG => quit ←←←

Exit LOG MODE
MDRV         ←←←

MDRV => 2    ←←←

------- Service Terminal for Maintenance
Copyright (c) 1996 Sony Corporation
------->hours ←←←

Hours Meter
             Operation Hours=   1440    Drum Run-1 Hours(res)=  502
Drum Run Hours =   590    Drum Run-2 Hours(res)=  12
Tape Run Hours =   415    Tape Run Hours  (res)=  365
Thread Counter =   11107  Thread Counter  (res)=  11107

------->arc  ←←←

[ Function Abort Reason Code Check ]
    [KEY] CTRL-C=EXIT
             SPACE=Counter Clear

    (*:current abort/hex counter)
code  |  1  |  2  |  3  |  4  |  5  |  6  | 7-1 | 7-2 | 7-3 | 7-4 |  8  |
count |  0  |  0  |  0  |  0  |  0  |  0  |  0  |  0  |  0  |  0  |  0  |
[CTRL-C]     ←←←
------->quit ←←←

MDRV  => 80  ←←←
```

[LOG will be displayed for about 3 minutes (38.4 kbps)]

```
log_rp = 00003120  :  No = 0BF6 : 010A0A0A 070F0000 00 00000001 00000000
log_rp = 00003130  :  No = 0BF7 : FF1A1A1A D0D0D0FF 00 F8FCFDD0 98FFFFF9
log_rp = 00003140  :  No = 0BF8 : 00016FB9 00FF0001 28 00260828 00000000
log_rp = 00003150  :  No = 0BF9 : 0000F000 0600171F 00 555B4F5B 046D1D03
log_rp = 00003160  :  No = 0BFA : 010A0A0A 070F0000 00 00000001 00000000
log_rp = 00003170  :  No = 0BFB : FF1A1A1A D0D0D0FF 00 F8FCFDD0 E4FFFFF9

MDRV => quit ←←←
Exit MDRV MODE
```

[Ending the LOG acquisition mode (PC)]

For Windows95 hyper terminal

Transfer Text capture Stop

ul1d3d.txt

3) Check the state
3-1) Host side
3-1-1) What is the Host side doing

Executed scsitool.exe from the PC and performing aging of the GY-2120.

3-1-2) Acquiring LOG of the Host Side (Refer to “scsitool.exe” of Section 1-12. SCSI Control Software)

3-2) Is the state special?

4) Determining the Causes
4-1) Estimating the causes
High possibility of CTL signal playback errors looking at the LCD error code and past errors.
As the tape is already in the UNTH (Unthread) state, there is no need to stop the cleaning roller.
Press the Emergency Eject button and eject the tape.

4-2) Checking the tape

Tape Type	DTF GW-730L (L Cassette)
Tape Lot	B45A906S
REC Inhi.	OFF
External view	No problems
Tape position	Same as S side (left side) window T side (right side) window and half of hub
Tape surface	There are no conspicuous scratches and scratches, but bending damage in the longitudinal direction at the 0.1 mm position of the upper edge (CTL side).
Tape guide	There are scratches at the upper half of the T side due to sliding with the upper edge of the tape.

4-3) Checking the running system

CTL Head

There are black rings at the upper and lower edges of the capstan tape.

Both sides of the cleaning roller in the longitudinal and helical directions are very dirty.

Guide The edge is dirty.

4-4) Checking the longitudinal signal

4-4-1) Check the playback output of the longitudinal signal using the reference tape.

Use remo.exe to run the tape.

Check the test pin of the EQ-66 board using an oscilloscope.

CTL ANA Normal

CTL PLS Normal

LTC ANA Normal

RSYC Normal

4-4-2) Check the position where the CTL signal has not been output by LOG

Find the problem from the ul1d3d.txt acquired.

As “Unload > 1D3D” has generated in the LCD, find the following;

ERROR!! parm [00000000 : 00000000 : 00000000] err [0000013D] at the end of the 2-PORT COMMAND LOG.

```
No..TIME......STATUS..CMD..INFORMATION.................................BOOT

122 0011BAC8   [SND 1]   19  mode[00000001]            ID [   250]   00053
                         len [   250] num [  50]  rst [   0] rty [ 0]
123 0011BBE0   [RCV 1]   19  ID [ 79006]  len[ 252]  eod[   0]  rty[ 0]  00053
              ERROR!!    parm[00000000:00000000:00000000] err[0000013D]
```

As err [0000013D] has generated at No. 123, the LCD becomes 1x3D.
As the CMD is 19, X is substituted by D as other errors, and the LCD becomes 1D3D.
As it corresponds with the message actually displayed on the screen, this error is the cause.

CM19 indicates longitudinal search CMD, err [0000013D] indicates that missing CTL pulse has been found during search.

In the No. 122 mode [00000001], ID [250], and len [250], 250ID is search in the reverse direction, and specified to stop there.

IDR value when the No. 123 ID [79006] operation completes (tape stop point)
(Ineffective when no CTL/LTC)
len [252] No. of IDCs moved until end of operations (tape stop point)

As CTL is not read for ID [79006], the information is not exact. Therefore, find the start point with the CMD before.

```
No..TIME......STATUS..CMD..INFORMATION.....................................BOOT

114  0011B739  [SND 1]   02  mode [00000002]            ID [  -730]       00053
                          len [     10] num [  50]  rst [   0] rty [ 0]
115  0011B8BF  [RCV 0]   02  ID  [ 78470]  len [ 280]  eod [   0]  rty [ 0] 00053
                          parm[00000000:00000000:00000000]
116  0011B8BF  [FRE 0]                                                     00053

117  0011BAB8  [RCV 1]   02  ID  [ 78750]  len [ 500]  eod [    0]  rty[ 0] 00053
                          parm[00000000:00000000:00000000]
```

The No. 117 CMD 02 ends normally by writing len [500] from ID [78750].

Stop position is 78750 + 500 = ID79250

http://getMANUAL.com

Normally after this, the EOD is written in 16ID, and preroll by repositioning is performed.
However in fast unload, search stops near ID79250 because it is in the No. 114 mode [000000002].

Continuous WRITE (02) CMD

	Automatic EOD addition	Repositioning
mode 0:	No	Yes
mode 1:	Yes	Yes
mode 2:	No	No

Consequently, it indicates that missing CTL was discovered when searched 252ID in the reverse direction with the vicinity of ID79250 as the start point.

79250 – 252 = ID78998

Therefore CTL is missing between ID78998 and ID79250.

Analysis of execution state of longitudinal search CMD by Syscom Time Code Log

If the Log. No. xxx3, xxx7, xxxB, and xxxF line is as follows, then all 0s are the longitudinal search CMD LOG;

log_rp=00008E70:No.=0A0B:00000000 00000000 00 00000000 00000000

```
Syscon Time Code Logger Display

Starting point of search

Logger mem pointer  :  Log No.  : Sys ID   R/W Len  R6 TCR      TCR  UB
                                      l_search_count
                                V_LTCR           RD06 READ_TIME
                                       ↓        ↓     ↓    ↓
log_rp = 00008E00  :  No = 0A04  :  00220029 00000001 20 00220029 00000000

log_rp = 00008E10  :  No = 0A05  :  00000700 00000000 00 00000701 00000001
                                       ↑        ↑     ↓    ↑
                              C_CTL_COUNT         ↑CTL       ↑
                                   normal_ltc_count  normal_ctl_count
log_rp = 00008E20  :  No = 0A06  :  00000000 00000001 00 00000000 00000000
                                                 ↑
                                     total_search_count
log_rp = 00008E30  :  No = 0A07  :  00000000 00000000 00 00000000 00000000

                                       l_search_count
Ending point of search               V_LTCR       ↓RD06  READ_TIME
                                       ↓        ↓     ↓    ↓
log_rp = 0000AD40  :  No = 0BF8  :  00215623 00000018 A8 00215623 00000000

log_rp = 0000AD50  :  No = 0BF9  :  00000225 00000018 00 00000307 00000018
                                       ↑        ↑     ↑    ↑
                              C_CTL_COUNT         ↑CTL       ↑
                                   normal_ltc_count  normal_ctl_count
log_rp = 0000AD60  :  No = 0BFA  :  00000000 0000007E 00 00000000 00000000
                                                 ↑
                                     total_search_count
log_rp = 0000AD70  :  No = 0BFB  :  00000000 00000000 00 00000000 00000000


                      Search starts     Search ends
```

	HH:MM:SS:FF	HH:MM:SS:FF
V_LTCR (Software correction value) 4Byte	00:22:00:29	00:21:56:23
(IDR Time Code)	79258 [ID]	79006 [ID]

((((00 [h] × 60 [m/h] + 22 [m]) × 60 [s/m]) + 00 [s]) × 30 [fr] + 29 [fr]) × 2 [ID/fr]
=79258 [ID]

((((00 [h] × 60 [m/h] + 21 [m]) × 60 [s/m]) + 56 [s]) × 30 [fr] + 23 [fr]) × 2 [ID/fr]
=79006 [ID]

l_search_count 3Byte	000001	000018
RD06 (stepping) 1Byte	A8 (Reverse normal)	
READ_TIME (TCG IC) 4Byte	00:22:00:29	00:21:56:23
	79258 [ID]	79006 [ID]

C_CTL_COUNT 4Byte	00:00:07:00	00:00:02:25
(IDC Time Code)	420 [ID]	170 [ID]

420 [ID] − 170 [ID] = 250 [ID]
It is moved by 250ID following CMD by IDC Counter (Counter using Reel FG)

normal_ltc_count 4Byte	0x00000000	0x00000018
	0 [Frame] = 0 [ID]	24 [Frame] = 48 [ID]
CTL(TCG IC) 4Byte	00:00:07:01	00:00:03:07
	422 [ID]	194 [ID]

422 [ID] − 194[ID] = 228 [ID]
By moving 250 [ID] with the IDC counter, it is moved 228 [ID] at the CTL.

normal_ctl_count 4Byte	0x00000001	0x00000018
	1 [Frame] = 2 [ID]	24 [Frame] = 48 [ID]

total_search_count 4Byte	0x00000001	0x0000007E
	1 [Frame] = 2 [ID]	126 [Frame] = 252 [ID]

Check is performed every 50 frames, to determine CTL, and LTC.

1st Check

```
                                l_search_count
                             V_LTCR            RD06 READ_TIME
                                     ↓        ↓    ↓   ↓
log_rp = 00009A80  :  No = 0ACC  :  00215909 00000033 A8 00215909 00000000
log_rp = 00009A90  :  No = 0ACD  :  00000510 00000030 00 00000523 00000027
                                     ↑        ↑    ↑   ↑
                               C_CTL_COUNT         ↑CTL      ↑
                                     normal_ltc_count  normal_ctl_count
log_rp = 00009AA0  :  No = 0ACE  :  00000000 00000033 00 00000000 00000000
                                                 ↑
                                        total_search_count
log_rp = 00009AB0  :  No = 0ACF  :  00000000 00000000 00 00000000 00000000
                                   l_search_count
                             V_LTCR            RD06 READ_TIME
                                     ↓        ↓    ↓   ↓
log_rp = 00009AC0  :  No = 0AD0  :  00215908 00000001 A8 00215908 00000000
log_rp = 00009AD0  :  No = 0AD1  :  00000509 00000001 00 00000522 00000001
                                     ↑        ↑    ↑   ↑
                               C_CTL_COUNT         ↑CTL      ↑
                                     normal_ltc_count  normal_ctl_count
log_rp = 00009AE0  :  No = 0AD2  :  00000000 00000034 00 00000000 00000000
                                                 ↑
                                        total_search_count
log_rp = 00009AF0  :  No = 0AD3  :  00000000 00000000 00 00000000 00000000

                 Before Reset  After Reset
l_search_count   0x00000033    00000001
                 51[Frame]     1[Frame]
normal_ltc_count 00000030      00000001
                 48[Frame]     1[Frame]
normal_ctl_count 00000027      00000001
                 39[Frame]     1[Frame]
```

As normal CTL reading is below 40 frames, 13D error is set.
Continue search.

2nd Check

```
                                l_search_count
                            V_LTCR            RD06 READ_TIME
                                    ↓         ↓    ↓    ↓
log_rp = 0000A740  :  No = 0B98  :  00215717 00000033 A8 00215717 00000000
log_rp = 0000A750  :  No = 0B99  :  00000319 00000033 00 00000401 00000033
                                    ↑         ↑    ↑    ↑
                              C_CTL_COUNT         ↑CTL      ↑
                                   normal_ltc_count  normal_ctl_count
log_rp = 0000A760  :  No = 0B9A  :  00000000 00000066 00 00000000 00000000
                                                ↑
                                        total_search_count
log_rp = 0000A770  :  No = 0B9B  :  00000000 00000000 00 00000000 00000000

                                l_search_count
                            V_LTCR            RD06 READ_TIME
                                    ↓         ↓    ↓    ↓
log_rp = 0000A780  :  No = 0B9C  :  00215716 00000001 A8 00215716 00000000

log_rp = 0000A790  :  No = 0B9D  :  00000318 00000001 00 00000400 00000001
                                    ↑         ↑    ↑    ↑
                              C_CTL_COUNT         ↑CTL      ↑
                                   normal_ltc_count  normal_ctl_count
log_rp = 0000A7A0  :  No = 0B9E  :  00000000 00000067 00 00000000 00000000
                                                ↑
                                        total_search_count
log_rp = 0000A7B0  :  No = 0B9F  :  00000000 00000000 00 00000000 00000000


                 Before Reset  After Reset
l_search_count    0x00000033    00000001
                  51[Frame]     1[Frame]
normal_ltc_count   00000033     00000001
                  51[Frame]     1[Frame]
normal_ctl_count  00000033      00000001
                  51[Frame]     1[Frame]
```

Normal reading above 40 frames is present in this case.

Problem areas 1st 12IDs

```
log_rp = 00008E10  :  No = 0A05  :  00000700 00000000 00 00000701 00000001
log_rp = 00008E50  :  No = 0A09  :  00000629 00000000 00 00000701 00000001
log_rp = 00008E90  :  No = 0A0D  :  00000628 00000000 00 00000701 00000001
log_rp = 00008ED0  :  No = 0A11  :  00000627 00000001 00 00000701 00000001
log_rp = 00008F10  :  No = 0A15  :  00000626 00000002 00 00000701 00000001
log_rp = 00008F50  :  No = 0A19  :  00000625 00000003 00 00000701 00000001
log_rp = 00008F90  :  No = 0A1D  :  00000624 00000004 00 00000701 00000001
log_rp = 00008FD0  :  No = 0A21  :  00000623 00000005 00 00000701 00000001
log_rp = 00009010  :  No = 0A25  :  00000622 00000006 00 00000701 00000001
log_rp = 00009050  :  No = 0A29  :  00000621 00000007 00 00000701 00000001
log_rp = 00009090  :  No = 0A2D  :  00000620 00000008 00 00000701 00000001
log_rp = 000090D0  :  No = 0A31  :  00000619 00000009 00 00000701 00000001
                                       ↑        ↑    ↑   ↑
                              C_CTL_COUNT        CTL      ↑
                                    normal_ltc_count  normal_ctl_count
```

Although the IDC counter and LTC are changing normally, only CTL is not counted.

4-4-2) Use the tape with the problem and check the playback output of the longitudinal signal.

Note

Set to REC Inhi. first before starting

Running the Tape

Use remo.exe.

Check the test pin of the EQ-66 board using an oscilloscope.

	ID79250 to ID79230	ref. No.
CTL ANA	Less than ±2.5V (Less than half the normal value)	TP 704
CTL PLS	Normal	TP710
LTC ANA	Normal	TP703
RSYC	Normal	TP705

5) Estimating the causes

As the CTL head is clogged, the level of the recording signal drops and becomes still, and in this state, the tape is played back in the reverse direction, and the playback signal level drops even lower, causing CTL PLS to generate.

6) Countermeasures

As a real cleaning tape is not used for more than 63 hours at the least, perform cleaning using a cleaning tape and continue aging.

6-3-3. Error Messages

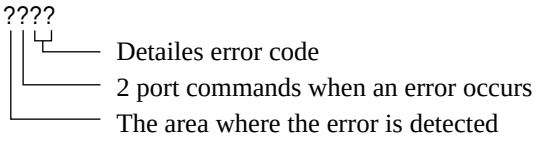
When the GY-2120 under the normal operation detects a trouble, the error message is displayed on LCD.
Description of error messages and their remedies are as follows:
(“????” is 4 digits of figure, which indicates error code)

Indication	Description	Remedies
Format? [a]	A tape which was not formated$_{(DTF)}$ is loading.	Format a tape.
Memory Check Err	Memory check error occurred in GY-2120 start-up.	Replace MEM-83 board
REF not Exist	Error occurred in the internal reference signal when starting GY-2120.	Replace MEM-83 board
Recover? [b]	A tape which was not unloaded$_{(DTF)}$ correctly is loading.	Perform recovery.
[E] Blk Tbl >????	Block management table is broken.	
[E] Cp Read >????	Error occured during read operation from tape in copy.	
[E] Cp Write >????	Error occured during write operation on the tape in copy.	
[E] Data IN >????	Data in phase of SCSI protocol was interrupted.	
[E] Data OUT >????	Data out phase of SCSI protocol was interrupted.	
[E] Dnld Err >????	Error occurred during firmware downloading.	
[E] Drive >????	Other error occured in GY-2120.	
[E] Fatal >????	Fatal error occured in GY-2120 (generated system error generate).	
[E] Flush >????	Error occured in writing all data in buffer on tape.	Judge by error code
[E] Fl/ULD >????	Failed in flashing and unloading. [c]	(Refer to next page)
[E] Format >????	Initialize$_{(DTF)}$ process was failed in.	
[E] Load >????	Load$_{(DTF)}$ process was failed in.	
[E] Mng Tbl >????	Management table became full.	
[E] Parity >????	Parity error occured at memory data.	
[E] PreWrite >????	Error happened in write setup process.	
[E] Read >????	Error occured during read operation.	
[E] Recover >????	Recover$_{(DTF)}$ process was failed in.	
[E] Spc Err >????	Error occured during Special Eject.	
[E] Subcode >????	Subcode area is broken.	
[E] Unload >????	Unload$_{(DTF)}$ process was failed in.	
[E] Vol Full >????	Write operation exceeds the size of current logical volume.	
[E] Write >????	Error occured during write operation.	

???? indicates error code
a) Handle error with “FORMAT (DTF)”.
b) Handle error with “RECOVER (DTF)”
c) Indicates error which occurred during flashing.

6-3-4. Error Codes

When the GY-2120 under the normal operation detects a trouble, the error code is displayed on LCD.
The error code is indicates the description of the error by a figure of 4 digits.
It means as follows:



Description of error code and their remedies are as follows:

Error code	Description	Remedies (probable causes)
0001	A tape which was not unloaded$_{(DTF)}$ correctly is loading.	Perform recovery.
0002	A tape which was not formated$_{(DTF)}$ is loading.	Format a tape.
0003	SCSI bus reset is executed during the SCSI sequence.	Confirm host computer side.
0004	Subcode area is broken.	Replace MA-83 board.
0005	Data in phase was interrupted.	Confirm host computer side.
0006	Data out phase was interrupted.	
0007	End of logical volume is reached.	(Control of host computer failed)
0008	Block management table is broken.	Replace MA-83 board.
0009	Parity error occurs at SCSI bus.	
000C	Overflow into volume management table.	(Control of host computer failed)
000D	Made to recover unrecorded volume on VSIT area.	
00E0	The tape is ejected while updating the firmware from the tape.	(Incorrect operations during updating)
1x1B	Failed download to the SYS CPU or SV CPU.	
1x23	Read/write to tape is not completed correctly even if the regular retry is executed.	Check GY-2120
1x24	When tape read/write started, servo lock failes.	Check GY-2120.
1x25	During tape read or write, servo lock lost.	
1x26	Tape positioning error occured.	
1x28	Failed in resetting the ID for starting READ/WRITE.	
1x29	Detected change in ID during READ/WRITE.	
1x3A	The DATA READY signal at the start of transfer was waited, but time-out occurred.	Cleaning tape running system or replace EQ-66 board.
1x3B	When tape READ/WRITE started, READ ID failes.	
1x3C	There is an area that ID was not recoreded in READ operation.	
1x3D	There is an area that CTL was not recoreded.	
1x41	Parity error occurred at the memory while the data sent from the memory to the DPR.	Replace MA-83 board.
1x42	Parity error occurred at the DPR while the data sent from the memory to the DPR.	
1x43	Parity error occurred at the DPR while the data sent fthe memory from the DPR.	
1x44	Parity error occurred at the memory while the data sent fthe memory from the DPR.	
1x45	1bit error occurred in the memory and it was corrected..	

Continued to next page

Continuedfrom previous page

Error code	Description	Remedies (probable causes)
1x46	More than 2-bit error occurred in the memory.	
1x5C	Cassette in GY-2120 is a write-protected state.	(Write-protect tab was pressed down)
1x7A	Read or write at the tape end.	Check GY-2120.
1x7B	Reach to the tape end during reading or writing.	
1x7C	Receive REW at the tape top.	
1x7E	Different from the completed state when tape operations ended.	
1x7F	Waiting for start/end of instructed tape operations and timed out.	
1xBB	Cannot eject the cassette during execution of servo adjustment/check command.	
1xCy	Error occured in initial check (y; initial check error code).	Replace MA-83 board.
2x01	The slack of the tape is detected during threading or unthreading.	Refer to Section 6-3-3.
2x02	The slack of the tape is detected in search, cue-up, fast forward or rewind mode.	
2x03	The slack or breaking of the tape is detected in recording or playback mode, or either of the lock of the supply or take-up reel is detected.	
2x04	Tape does not run at the speed of designation in fast forward or rewind mode.	
2x05	FG count of the supply or take-up reel is out of specification at the diagnostics before loading (in pulling down the cassette compartment).	
2x06	Excessive tension is detected in recording or playback mode.	
2x07	It is detected that the capstan does not rotate at the speed of designation in play or search mode. Otherwise, FG count of capstan is out of specification.	
2x08	The number of revolutions of drum motor is out of specification.	
2x09	It is detected that threading or unthreading is not completed.	
2x0A	It is detected that the tape top process at the thread is not completed, therefore threading can not be done.	
2x10	Condensation is detected.	
2x11	The tape top or and sensor operation is defective.	
2x12	The tape top sensor operation is defective.	
2x13	The tape end sensor operation is defective.	
2x14	Detected overheat. Problems were also detected in the cooling fan motor.	
2x20	It is detected that cassette up/down operation is not completed.	
2x21	It is detected that driving of the L position to S position or the S position to L position in the reel table is not completed.	
2x22	The operation of the L/S position sensor of the reel table is defective.	
2x91	Servo reference signal (VD) is defective.	
2x93	The interface between SV (IC806 on the MA-83 board) and EQ (IC600 on the EQ-66 board) is defective.	
2x97	The operational defect of the NV-RAM on the MS-54 board.	

“x” mark in the error code indicates an arbitrary number.
Any number can be assigned to “x”
When this error code is indicated on the LCD.
For details of the meaning of “x” at the second place from the left of the error code, refer to “Commands to SYS Side CPU” on page 6-27.

6-3-5. System Error Code

If multiple system errors occur, the priority level of the error code display is as follows:

2x94,2x93,2x91,2x97,
2x02,2x03,2x04,2x05,2x07,2x06,2x01,2x09,2x08,2x0a,
2x10,2x11,2x12,2x13,
2x20,2x21,2x22

Note

In the “Protection mode” described in this section, the servo control system automatically stops the tape transport and drum motor, and maintains the state. The current mode cannot be automatically returned when it enters the protection mode. When the protection mode is entered with the cassette tape inserted, take out the cassette tape manually with reference to Section 1-5. Do not turn the power on again without taking out the cassette tape. This may damage the tape.

2x 01

(ERROR 01) Tape slacked in THREAD mode

Description: Tape slacking was detected during threading or unthreading.

Detection conditions:

1) When no take-up reel FG can be detected in the unthread operation just after activation
2) When the relation between the take-up reel FG and threading FG is out of the specification in operations other than unthread just after activation

Subcode: None (Displays 00.)

Possible cause:

- Cassette compartment trouble or installation defect
  * The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of take-up reel FG detection block
- Take-up reel FG amplifier (DR-327 board or MS-54 board) trouble
- Take-up reel motor trouble
- Take-up reel motor drive circuit (DR-327 board or MS-54 board) trouble
- Take-up reel brake trouble
- Take-up reel brake solenoid drive circuit (MS-54 board) trouble
- Servo adjustment defect on take-up reel
- Harness disconnection
- Take-up reel table height adjustment defect

Protection operation:

Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to Section 1-5). Do not turn the power on again without taking out the cassette. This may damage the tape.

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2x 02

(ERROR 02) Tape slacked in SEARCH/FF/REW mode

Description:Tape slacking was detected in SEARCH, FF, or REW mode.

Detection conditions:

1) When the take-up value is lower than the specified value with respect to the tape supply value
2) When the relation between the capstan FG, supply reel FG, and take-up reel FG are out of the specification
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds

Subcode: None (Displays 00.)

Possible cause:

- Cassette compartment trouble or installation defect
  * The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG amplifier (DR-327 board or MS-54 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-327 board or MS-54 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-327 board or MS-54 board) trouble
- Capstan FG amplifier (DR-327 board or MS-54 board) trouble
- Take-up torque insufficiency during REW due to supply tension sensor or its related circuit (DR-327 board or MS-54 board) trouble
- Servo adjustment defect on capstan, reel, and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-54 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protection operation:

Enters the protection mode. The normal state may be returned after the protection mode is entered at the end of the tape.

CAUTION

Be sure to take out the cassette manually (refer to Section 1-5). Do not turn on the power again without taking out the cassette. This may damage the tape.

2x 03

(ERROR 03) Tape slacked in REC/PLAY mode

Description:Tape slacking, tape exhausted, or supply or take-up reel lock was detected in the REC or PLAY mode.

Detection conditions:

1) When the take-up value is lower than the specified value with respect to the tape supply value
2) When the relation between the capstan FG, supply reel FG, and take-up reel FG are out of the specification
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds
4) When the tension value calculated from the supply tension sensor output is less than 15 g continuously for more than three seconds

Subcode: None (Displays 00.)

Possible cause:

- Cassette compartment trouble or installation defect
  * The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG amplifier (DR-327 board or MS-54 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-327 board or MS-54 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-327 board or MS-54 board) trouble
- Capstan FG amplifier (DR-327 board or MS-54 board) trouble
- Servo adjustment defect on capstan, reel, and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-54 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protection operation:

Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to Section 1-5). Do not turn on the power again without taking out the cassette. This may damage the tape.

2x 04

(ERROR 04) Excessive tape speed deviation in FF/REW mode

Description: Abnormal tape transport speed was detected in the FF or REW mode.

Detection conditions:

When the tape speed calculated from the supply reel FG and take-up reel FG is under a half of the specified tape speed continuously for more than four seconds

Subcode: None (Displays 00.)

Possible cause:

- Cassette compartment trouble or installation defect
  - * The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel motor trouble
- Supply or take-up reel FG amplifier (DR-327 board or MS-54 board) trouble
- Supply or take-up reel drive circuit (DR-327 board or MS-54 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-54 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protection operation:

Stops the tape transport and enters the rest state.

2x 05

(ERROR 05) Reel FG test failed

Description: Abnormal supply reel or take-up reel operation was detected in a diagnosis during cassette insertion.

Detection conditions:

1) When the supply reel FG or take-up reel FG count is less than the specified value with the reel rotated
2) When the supply reel FG or take-up reel FG count is more than the specified value with the reel stopped

Subcode: None (Displays 00.)

Possible cause:

- Supply or take-up reel FG sensor (SE-228 board) trouble or clearance adjustment defect
- Supply or take-up reel FG amplifier (DR-327 board or MS-54 board) trouble
- Supply or take-up reel drive circuit (DR-327 board or MS-54 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-54 board) trouble
- Harness disconnection

Protection operation:

Ejects the cassette.

2x 06

(ERROR 06) Illegal tape tension in REC/PLAY mode

Description: Excessive tension was detected in the REC or PLAY mode.

Detection conditions:

When the tension value calculated from supply tension sensor output is more than 55 g continuously for more than three seconds

Subcode: None (Displays 00.)

Possible cause:

- Cassette compartment trouble or installation defect
  * The reel did not rotate because the cassette was lifted-up from the specified position.
- Supply tension sensor or its related circuit (DR-327 board or MS-54 board) trouble
- Supply reel motor trouble
- Supply reel motor drive circuit (DR-327 board or MS-54 board) trouble
- Servo adjustment defect on supply reel and supply tension sensor
- Supply reel brake trouble
- Supply reel brake solenoid drive circuit (MS-54 board) trouble
- Harness disconnection

Protection operation:

Stops the tape transport and enters the rest state.

2x 07

(ERROR 07) Capstan defective

Description: Malfunction of capstan motor was detected.

Detection conditions:

1) When the capstan FG count is less than the specified value in a diagnosis during cassette insertion
2) When the frequency calculated from the capstan FG is out of the specification in the REC, PLAY, or SEARCH mode
3) When CAPSTAN FG(A) NOR signal and CAPSTAN FG(B) NOR signal interrupts are not normal for about 40 ms

Subcode: None (Displays 00.)

Possible cause:

- Capstan motor trouble
- FG sensor trouble in capstan motor
- Capstan motor drive circuit (DR-327 board or MS-54 board) trouble
- Capstan motor FG amplifier (DR-327 board or MS-54 board) trouble
- Capstan FG duty adjustment defect

Protection operation:

Ejects the cassette for No.1 in detection conditions.
Stops the tape transport and enters the rest state for No.2 and No.3 in detection conditions.

2x 08

(ERROR 08) Drum defective

Description: Malfunction of drum motor was detected.

Detection conditions:

When the drum FG cycle is shifted more than about ±30% continuously for more than 10 seconds as compared with during normal rotation

Subcode: None (Displays 00.)

Possible cause:

- Drum motor trouble
- Drum microcomputer (EQ-66 board) trouble
- Drum motor drive circuit (DR-327 board) trouble
- Drum FG/PG waveform shaper circuit (MA-83 board) trouble
- Assembly defect during inner drum replacement

Protection operation:

Stops the tape transport and enters the rest state in the unthread end state.

2x 09

(ERROR 09) Threading/unthreading overtime

Description: Malfunction of threading or unthreading operation was detected.

Detection conditions:

1) When no operation is completed within about six seconds after operation start
2) When no threading FG is output within about 0.4 second during threading motor drive
3) When states other than unthread end are continued for more than six seconds in case that the unit should be in the unthread end state

Subcode: None (Displays 00.)

Possible cause:

- Unthread end sensor (TR-105 board) trouble
- Thread end sensor (TR-105 board) trouble
- Thread end/unthread end input port (MS-54 board) trouble
- Threading motor trouble
- Threading FG sensor (PTC-54 board) trouble
- Threading FG amplifier (MS-54 board) trouble
- Threading motor drive circuit (DR-327 board) trouble
- Threading mechanism trouble

Protection operation:

Ejects the cassette during cassette insertion or ejection.
Enters the protection mode during tape loading.
Stops the tape transport and enters the rest state in cases except the above.

2x 0A

(ERROR 0a) Tape top process does not finish

Description:It was detected that the tape top processing in the thread state is not completed.

Detection conditions:

When the tape top is detected again after it is processed

Tape top processing

In this processing, the tape is slightly forwarded without taking out the tape after unthread because the tape top was detected during threading. (Short FF)

Subcode: None (Displays 00.)

Possible cause:

- Take-up reel motor trouble
- Servo adjustment defect on take-up reel
- Take-up reel motor drive circuit (DR-327 board or MS-54 board) trouble
- Tape top sensor trouble
- Tape top detection circuit (DR-327 board or MS-54 board) trouble
- Tape top input port (MA-83 board) trouble
- Tape abnormality

Protection operation:

Enters the rest state in the unthread end state.

2x 10

(ERROR 10) Dew detected

Description:Dew was detected.

Detection conditions:

When the dew sensor detects dew condensation continuously for about two seconds

Subcode: None (Displays 00.)

Possible cause:

- Actual dew detection (When the operating environment rapidly changes from low temperature to high temperature and high humidity)
- Dew sensor trouble
- Dew input port (MS-54 board) trouble

Protection operation:

Prohibits the cleaning roller operation.
Stops the tape transport and enters the rest state in the unthread end state when the tape is loaded in states other than REC or PLAY.
Prohibits the tape threading.
Prohibits the cassette loading.

2x 11

(ERROR 11) Tape top/end sensor defective

Description: The tape top and tape end were detected simultaneously.

Detection conditions:

When the simultaneous detection of the tape end and tape top is continued for more than eight seconds

Subcode: None (Displays 00.)

Possible cause:

- Tape top sensor or tape end sensor trouble
- Tape top or tape end detection circuit (DR-327 board or MS-54 board) trouble
- Tape top/tape end input port (MA-83 board) trouble
- Harness disconnection

Protection operation:

Stops the tape transport and enters the rest state during tape transport.

2x 12

(ERROR 12) Tape top sensor defective

Description: Malfunction of tape top sensor was detected.

Detection conditions:

When the tape top is detected continuously for more than eight seconds

Subcode: None (Displays 00.)

Possible cause:

- Tape top sensor trouble
- Tape top detection circuit (DR-327 board or MS-54 board) trouble
- Tape top input port (MA-83 board) trouble
- Harness disconnection
- The tape cannot move at the tape top due to troubles other than the tape sensor.

Protection operation:

In the FF mode, continues the operation until the tape end is detected. Stops the tape transport and enters the rest state when the tape end is detected.
During tape transport in forward direction, the FF mode can be entered only while the total tape quantity is observed.
Stops the tape transport and enters the rest state during tape transport except the above.

2x 13

(ERROR 13) Tape end sensor defective

Description: Malfuncion of tape end sensor was detected.

Detection conditions:

When the tape end is detected continuously for more than eight seconds

Subcode: None (Displays 00.)

Possible cause:

- Tape end sensor trouble
- Tape end detection circuit (DR-327 board or MS-54 board) trouble
- Tape end input port (MA-83 board) trouble
- Harness disconnection
- The tape cannot move at the tape end due to troubles other than the tape sensor.

Protection operation:

In the REW mode, continues the operation until the tape top is detected. Stops the tape transport and enters the rest state when the tape top is detected.
During the tape transport in reverse direction, the REW mode can be entered only while the total tape quantity is observed.
Stops the tape transport and enters the rest state during tape transport except the above.

2x 14

(ERROR 14) Cooling fan defective

Description: Malfunction of cooling fan motor was detected.

Detection conditions:

When the fan motor FG frequency is less than the specified value continuously for more than one second. Otherwise, the thermal sensor on EQ-66 board is detected that the temperature in unit is more than the specified value.

Subcode: None (Displays 00.)

Possible cause:

- Fan motor trouble
- Fan motor rotation detection circuit (MA-83 board) trouble
- Thermal sensor (TH601 on the EQ-66 board) trouble

Protection operation:

None

2x 20

(ERROR 20) Cassette compartment driving overtime

Description: Malfunction of cassette compartment-up or down operation was detected.

Detection conditions:

When no operation is completed even about six seconds after operation start

Subcode: None (Displays 00.)

Possible cause:

- Cassette compartment block trouble
- Cassette compartment motor drive circuit (DR-327 board or MS-54 board) trouble
- Cassette-down sensor (CL-29 board) trouble
- Cassette-down input port (MS-54 board) trouble

Protection operation:

Stops the movement of the cassette compartment and reel table until a cassette eject command is received.

2x 21

(ERROR 21) Reel shift driving overtime

Description: Malfunction of movement of the reel table corresponding to the cassette size was detected.

Detection conditions:

When no operation is completed even about six seconds after operation start

Subcode: None (Displays 00.)

Possible cause:

- Reel shift mechanism trouble
- Reel shift motor trouble
- Reel shift motor drive circuit (DR-327 board or MS-54 board) trouble
- Reel position sensor (PTC-71 board) trouble (S position sensor or L position sensor)
- Reel position inpur port (MS-54 board) trouble

Protection operation:

Stops the movement of the reel table and ejects the cassette during cassette loading.

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2x 22

(ERROR 22) Reel position sensor defective

Description:The L and S cassette positions of the reel table were detected simultaneously.

Detection conditions:

When the L and S position sensors detect the L and S cassette positions, respectively at the same time

Subcode: None (Displays 00.)

Possible cause:

- S position sensor (PTC-71 board) trouble
- L position sensor (PTC-71 board) trouble
- Reel position input port (MS-54 board) trouble

Protection operation:

Ejects the cassette if possible when an error occurs during cassette insertion.
Prohibits the cassette loading.

2x 91

(ERROR 91) Servo reference does not exist

Description:Abnormality was detected in the servo reference signal (VD).

Detection conditions:

When the VD signal is not input to microcomputer SYS CPU (MA-83 board) in a system control system for more than a fixed time period

Subcode: None (Displays 00.)

Possible cause:

- Servo IC (IC814/MA-83 board) trouble
- Microcomputer SYS CPU (MA-83 board) operation defect in servo system

Protection operation:

Enters the protection mode when abnormality is detected by SV CPU.
Displays only this error when abnormality is detected by only SYS CPU.

2x 93

(ERROR 93) Inter CPU communication error (SV)

Description: Abnormality was detected in the communication between microcomputer SYS CPU (MA-83 board) in a system control system and SV CPU (MA-83 board) in a servo system or between SV CPU and microcomputer EQ CPU (EQ-66 board) in a servo system.

Detection conditions:

1) When the communication check between SYS CPU and SV CPU fails during normal operation
2) When the SV CPU initialization is not completed during activation
3) When the communication check between SV CPU and EQ CPU fails during normal operation

Subcode: 02: When the system error occurs due to No.1 in detection conditions
04: When the system error occurs due to No.2 in detection conditions
08: When the system error occurs due to No.3 in detection conditions

Possible cause:

- SV CPU trouble
- EQ CPU trouble
- Signal line disconnection between SV or EQ and SYS CPU
- Trouble of 2-port RAM (MA-83 board) with SYS and SV used in common

Protection operation:

Enters the protection mode.

2x 97

(ERROR 97) SV NV-RAM defective

Description: Abnormality was detected in the NV-RAM (MS-54 board) in a servo system.

Detection conditions:

When the checksum of NV-RAM data does not coincide during activation

Subcode: None (Displays 00.)

Possible cause:

- NV-RAMs trouble
- Signal line disconnection between MS-54 board and NV-RAM

Protection operation:

Enters the protection mode only when the checksum does not coincide, respectively. (When the other coincides even if one of them does not coincide, the system functions normally. In this case, the protection operation is not performed.)

6-3-6. Countermeasures for Error Codes for GY-2120 and List of Main Maintenance Parts

Error code	Processing	Replacement Parts List *
0001	LOG_Check->Recover	—
0002	LOG_Check->Format, ERASE	—
0003	LOG_Check->Host-Check	—
0004	LOG_Check	MA-83 or GY-2120
0005	LOG_Check->Host-Check	—
0006	LOG_Check->Host-Check	—
0007	LOG_Check->Host-Check	—
0008	LOG_Check	MA-83 or GY-2120
0009	LOG_Check	MA-83 or GY-2120
000C	LOG_Check->Host-Check	—
000D	LOG_Check->Host-Check	—
1x1B		MA-83 or IF-682
1x1C		MA-83 or IF-682
1x1F	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78,EQ-66 or GY-2120
1x23	LOG_Check->DIAG-Check->Cleaning	MEM-83, MA-83, DSP-78,EQ-66 or GY-2120
1x24	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78,EQ-66 or GY-2120
1x25	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78,EQ-66 or GY-2120
1x26	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78,EQ-66 or GY-2120
1x3B	Cleaning	EQ-66
1x3C	Cleaning	EQ-66
1x3D	Cleaning	EQ-66
1x41		MA-83
1x42		MA-83
1x43		MA-83
1x44	Loopback_Check	MA-83 or EQ-66
1x47		MA-83

* The parts marked * must be replaced in the order given from left to right.

Error code	Processing	Replacement Parts List
1x5B	Cassette REC INH OFF	—
1x7A	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78, EQ-66 or GY-2120
1x7B	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78, EQ-66 or GY-2120
1x7C	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78, EQ-66 or GY-2120
1x7E	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78, EQ-66 or GY-2120
1X7F	LOG_Check->DIAG-Check	MEM-83, MA-83, DSP-78, EQ-66 or GY-2120
1xCy		MA-83
1xDA		Cassette Inject
2x01	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x02	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x03	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x04	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x05	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x06	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x07	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x08	LOG_Check->Cassette-Man-Eject	MA-83, EQ-66, DR-327, MS-54 or GY-2120
2x09	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x0A	LOG_Check->Cassette-Man-Eject	MA-83, DR-327, MS-54 or GY-2120
2x10	LOG_Check->Cassette-Man-Eject	MS-54, SE-358 or GY-2120
2x11	LOG_Check->Cassette-Man-Eject	MA-83, DR-327, MS-54 or GY-2120
2x12	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x13	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x14		FAN, MA-83, EQ-66 or GY-2120
2x20	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x21	LOG_Check->Cassette-Man-Eject	DR-327, MS-54 or GY-2120
2x22	LOG_Check->Cassette-Man-Eject	MS-54, DR-327, or GY-2120
2x91	LOG_Check->Cassette-Man-Eject	MA-83 or GY-2120
2x93	LOG_Check->Cassette-Man-Eject	MA-83, EQ-66 or GY-2120
2x94	LOG_Check->Cassette-Man-Eject	MA-83 or GY-2120
2x97	LOG_Check->Cassette-Man-Eject	MS-54 or GY-2120

Note) The EX-603 board is the relay board of the EQ-66 board, and should be replaced together with the EQ-66 board.

* Causes of problems must be determined before parts are replaced. Therefore use the LOG_Check to aid the procedure of replacing and checking parts to be replaced.

* The DIAG-Check is intended for checking the main data signal processing systems and control system circuits by checking general operations of the MEM-83, MA-83, DSP-78, and EQ-66 boards by All Check.

* Cassette-Man-Eject means to remove the tape from the unit manually with the power OFF, as a “protection mode” for tape transport system errors in the range of the 2xxx error codes.
  For the 1xxx error codes, the cassette can be removed by the emergency eject SW.

* Cleaning means to clean using GW-90CL, as well as cleaning the tape running system using a cleaning cloth and cleaning liquid during periodic inspections, etc.

* Host-Check indicates checking the operations from the system by analysis of the SCSI bus.
* Other replacement parts list

Error Message	Processing	Replacement Parts List
Format?	Format, ERASE	—
Memory Check Err		MEM-83
Recover?	Recover	—

Front Panel LED/LCD	Replacement Parts List
LED/LCD does not light up after the power is turned on	DSP-78, SW power supply, fuse, or GY-2120

Rear Panel LED (TERM POEWER)	Replacement Parts List
LED does not light up even if power is supplied	IF-682, microfuse, or GY-2120

List of Replacement Parts during Periodic Inspection

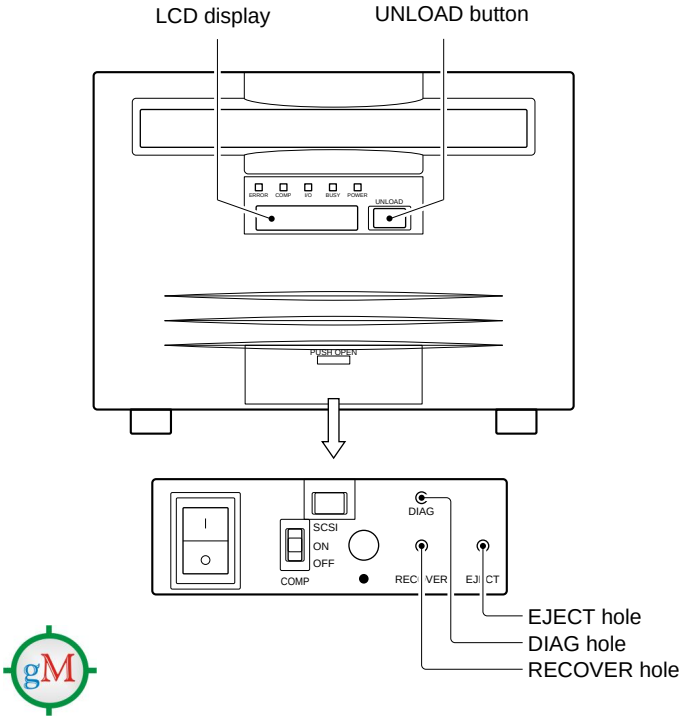
Upper drum assembly
Pinch arm assembly
V cleaning roller assembly
Brush SR4 assembly
Filter assembly
Stopper washer
Poly-washer for adjustment (-01)
Poly-washer for adjustment (-11)

6-3-7. Troubleshooting

This section describes the troubleshooting in which the self-diagnosis function of the GY-2120 is used.
Confirm that the host computer connected before this troubleshooting is performed is not influenced in a system.

a) When the DIAG hole on the front panel of the main unit is used

1. DIAG activation
   Press the DIAG hole on the front panel continuously for about two seconds.
   The COMP indicator blinks when DIAG is activated.



2. DIAG menu selection
   Press the UNLOAD button on the front panel to select the desired DIAG No.
   (For more details of the DIAG No., refer to the next page.)

3. DIAG execution
   Press the RECOVER hole on the front panel.

   Note
   For the DIAG operation that is terminated with the serial No. display state displayed, press the RECOVER hole to display the DIAG normal termination screen after the contents of the display are confirmed.

4. DIAG termination
   Press the DIAG hole on the front panel continuously for about two seconds.

<LCD display>

(Example : Select DIAG No. 12)

DIAG: 012

(In execution)

DIAG: 012 #

The result is OK. → “0000” is displayed.

DIAG: 012 0000

The result is NG. → “*” blinks and an error code is displayed.

DIAG: 012 * xxxx

Abort the DIAG. → “*” blinks and an error code “9999” is displayed.

DIAG: 012 *9999

Menu No.	Item	Corresponding command from PC
001	SCSI CPU system all check	Same self-diagnosis command number as the lower two digits in menu No. (Refer to Section 6-2-1.)
006	Serial No. display	
011	SCSI CPU system all check	
012	SCSI CPU - SYS CPU transmission check	
013	LCD display check	
014	LED display check	
015	SCSI CPU ROM check	
016	SCSI CPU RAM check	
021	SYS CPU system all check	
022	SYS CPU ROM check	
023	SYS CPU RAM check	
031	Signal all loop-back check	
032	Loopback-3 check (MA board)	
033	Loopback-2 check (EQ board (1))	
034	Loopback-1 check (EQ board (2))	
041	Bank memory check	
051	IF CPU system all check	
052	IF CPU ROM check	
053	IF CPU RAM check	
061	Hours meter display : Operation hours	Self-diagnosis command No.4 (Refer to Section 6-2-1)
062	Hours meter display : Drum hours (for replacement)	
063	Hours meter display : Drum hours (for cleaning)	
065	Hours meter display : Tape run hours	
066	Threading count display	
071	SCSI ID display	Self-diagnosis command No.3 (Refer to Section 6-2-1)
072	DIP SW display : Rear Panel DIP SW	
073	DIP SW display : IF board DIP SW S201	
074	DIP SW display : IF board DIP SW S202	
075	Display of SERV setting value	Service setting command No.11 (Refer to section 6-2-5.)
091	ROM version display : SCSI CPU	Self-diagnosis command No.5 (Refer to Section 6-2-1)
092	ROM version display : SYS CPU	
093	ROM version display : IF CPU	
094	ROM version display : SV CPU	
095	ROM version display : EQ CPU	
096	ROM version display : DR CPU	
097	Firmware revision display	(Same as “091” to “096”)

Continued to next page

Menu No.	Item	Corresponding command from PC
099	Firmware download from tape	Download command No.99 (Refer to Section 6-2-3.)
101	RF PB all adjust	SV/RF Maintenance Mode :RF01
105	RF REC all adjust	SV/RF Maintenance Mode :RF05
107	RF adjustment data NVRAM save	SV/RF Maintenance Mode :RF07
109	RF Initial date set	SV/RF Maintenance Mode :RF09
201	Servo Reel/Capstan system all adjust	SV/RF Maintenance Mode :SV01
210 (*1)	Free Speed Adjust	SV/RF Maintenance Mode :SV0A
211 (*1)	RF Switching position adjust	SV/RF Maintenance Mode :SV0B
212	Servo adjustment data NVRAM save	SV/RF Maintenance Mode :SV0C
228	Servo Reel/Capstan motor & FG check	SV/RF Maintenance Mode :SV1C
229 (*2)	SAT function check	SV/RF Maintenance Mode :SV1D
231	Servo initial date set	SV/RF Maintenance Mode :SV1F
300 (*3)	Servo/RF all adjust	————
900	Drum Hours meter (for replacement) reset	SV/RF Maintenance Mode :HRR
901	Drum Hours meter (for cleaning) reset	
902	Tape run hours meter reset	
904	Threading counter reset	

*1 : This command requires alignment tape YR2-1.
*2 : This command requires alignment tape YR5-1.
*3 : This command requires alignment tape YR2-1, YR5-1 and recording tape.

Note

In menu Nos. 101 (RF PB all adjust), 229 (SAT function check) and 105 (RF REC all adjust), a tape is used for adjustment.

1) For menu No. 101 and 229
   Alignment tape YR5-1 is used.
   Select menu No. 101 (229) and press the RECOVER button for activation. "Insert YR5 Tape" then appears on the LCD display. The adjustment operation is automatically initiated when alignment tape YR5-1 is inserted while this message is displayed.

2) For menu No. 105
   A tape on which adjustment data can be recorded is used. (Do not use a tape that is used for ordinary data recording.)
   Select menu No. 105 and press the RECOVER button for activation. "Insert Blnk Tape" then appears on the LCD display. The adjustment operation is automatically initiated when a tape is inserted while this message is displayed.

3) For menu Nos. 210 and 211
   Alignment tape YR2-1 is used. Message "Insert YR2 Tape" appears on the LCD display when menu No. 210 (211) is selected and when the RECOVER button is pressed for activation. The adjustment is automatically started if alignment tape YR2-1 is inserted when this message is displayed.

4) For menu No. 300
   Alignment tapes YR2-1 and YR5-1, and a blank tape are used. The message below appears on the LCD display during execution when menu No. 300 is selected and when the RECOVER button is pressed for activation. In this case, insert the corresponding alignment tape.

LCD display	Corresponding tape
"Insert YR2 Tape"	Alignment tape YR2-1
"Insert YR5 Tape"	Alignment tape YR5-1
"Insert Blnk Tape"	Blank tape

Note

The screen display when commands in which the output result differs from the ordinary result are executed is shown below. When these commands are executed, press the RECOVER hole and display the DIAG normal termination screen to select the command below after the contents of the display are confirmed.

Command		<LCD Display>	
006	Serial No. display	Serial #xxxxx	
061	Hours meter display : Operation hours	Oper:xxxxxxH	
062	Hours meter display : Drum hours (for replacement)	Drum1:xxxxxxH	
063	Hours meter display : Drum hours (for cleaning)	Drum2:xxxxxxH	
065	Hours meter display : Tape run hours	Tape:xxxxxxH	
066	Threading count display	Thrd:xxxxxx	
071	SCSI ID display	SCSI ID[5]	
072	DIP SW display : Rear Panel DIP SW	RP DIP:xxxxxxxx	(1=ON,0=OFF)
073	DIP SW display : IF board DIP SW S201	IF S201:xxxx	Indicates switches as 1, 2, 3...etc. in the direction from left to right.
074	DIP SW display : IF board DIP SW S202	IF S202:xxxxxxxx	
075	SERV set valne display	MSW1:4100000*	
091	ROM version display : SCSI CPU	SCSI ROM Vx.xx	
092	ROM version display : SYS CPU	SYS ROM Vx.xx	
093	ROM version display : IF CPU	IF ROM Vx.xx	
094	ROM version display : SV CPU	SV ROM Vx.xx	
095	ROM version display : EQ CPU	EQ ROM Vx.xx	
096	ROM version display : DR CPU	DR ROM Vx.xx	
097	Firmware revision display	Rev. GYx.xx	

MSW1:4100000*

- Not in use
- COMP SW mode (0:OFF/1:ON)
- A-A mode (0:OFF/1:ON)
- PetaServe mode (0:OFF/1:ON)
- REW bit mode (0:OFF/1:ON)
- BT bit ignore mode (0:OFF/1:ON)
- Ignore Wide Residue mode (0:OFF/1:ON)
- RS-232C baud Rate (0:2400bps/1:4800bps/2:9600bps/ 3:19200bps/4:38400bps)

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An error code appears on the LCD display if a trouble is detected when the DIAG operation is executed from the front panel. The error code and its contents are shown below.

code	Description
0000	No error
0120	SCSI CPU - SYS CPU transmission check error
0130	LCD display check error
0140	LED display check error
0150	SCSI CPU ROM check error
0160	SCSI CPU RAM check error
0220	SYS CPU ROM check error
0230	SYS CPU RAM check error
0320	loopback-3 check (MA board) error
0330	loopback-2 check (EQ board (1)) error
0340	loopback-1 check (EQ board (2)) error
0410	bank memory check error
0520	IF CPU ROM check error
0530	IF CPU RAM check error
0990	Tape which is not for download was inserted.
0991	Error occurred during reading of tape for download.
0992	Contents of tape for download is abnormal.
1000	Cassette is not inserted in DIAG.
1001	Servo lock error at DIAG.
1002	Cassette in GY-2120 is a write-protected state
1003	Error rate check after adjustment is defective
1020	RF PB Level adjust failed
1030	RF PB PLL adjust failed
1040	RF PB Equalizer adjust failed
1050	RF REC current adjust failed
1070	RF Data save failed
2020	S Reel FG Duty adj. failed
2030	T Reel FG Duty adj. failed
2040	Capstan FG Duty adj. failed
2050	S Reel Offset/Friction adj. failed
2060	T Reel Offset/Friction adj. failed
2070	S Reel Torque adj. failed
2080	T Reel Torque adj. failed
2090	S/T Tention Offset adj. failed
2120	SV Data save failed

code	Description
2280	S Reel FG/Motor check error
2281	T Reel FG/Motor check error
2282	Capstan FG/Motor check error
2283	S Reel Offset/Friction check error
2284	T Reel Offset/Friction check error
2285	S Reel Torque check error
2286	T Reel Torque check error
2290	SAT Function check error
2320	Tracking Auto check error
2325	(Cueup failure) Could not cueup to latter half CTL/Tracking Check
2321	(Low RF level) REC-A envelope level is low
2322	(CTL position spec out) Tracon max value is outside the specification
2323	(Checking interrupt) Set to mode other than PLAY
2324	(Tracking spec out) Track linearity is output the specification Pairing Check
2326	(Low RF level) REC-C envelope level is low
2327	(Pairing spec out) Pairing is output the specification
2328	(checking interrupt) Set to mode other than PLAY
9000	Drum Hours meter (for replacement) reset failed
9010	Drum Hours meter (for cleaning) reset failed
9020	Tape run hours meter reset failed
9040	Threading counter reset failed
9999	diag operation aborted

b) Troubleshooting Using Self-Diagnosis Mode

1. PC Connection

Turn off the power of the GY-2120 and terminal before connecting the PC.
Connect the PC to the RS-232C port (D-Sub 25 pins, female, 9600 bps, 8-bit/character, non parity, and 1 stop bit) on the rear panel of the GY-2120. Set SET UP switch 8 to OFF.
For the pin assignment of the connector and the connection connector, refer to Section 1-4.

2. Self-Diagnosis Mode Activation

Start up a terminal emulation software on the PC. Then turn on the power of the GY-2120. Enter four characters “DIAG” from the PC. Prompt “DIAGNOSTIC =>” is then displayed on the screen of the PC.

- If Prompt is not displayed, confirm the RS-232C port setting (on the PC side) and connection. If no abnormality is found in the RS-232C port setting and connection, replace the FM board.
- Enter four charactors “HELP”, description of menu is displayed.

3. SCSI CPU Check

Enter “11” as the menu number, and press the ENTER key. (Perform the All Check item in a SCSI CPU block.)

- If any of the Work Memory Check, ROM Check, and 2-Port Communication Check items is NG, replace the MA-83 board.
- If any of the LCD Check and LED Check items is NG, replace the DSP-78 board. If the error cannot be restored by replacement, replace the MA-83 board.

4. DRV CPU Check

Enter “21” as the menu number. (Perform the All Check item in a SYS CPU block.)

- If any of the Memory Check and ROM Check items is NG, replace the MA-83 board.
- If the PIO Check item is NG, replace the MA-83 board.

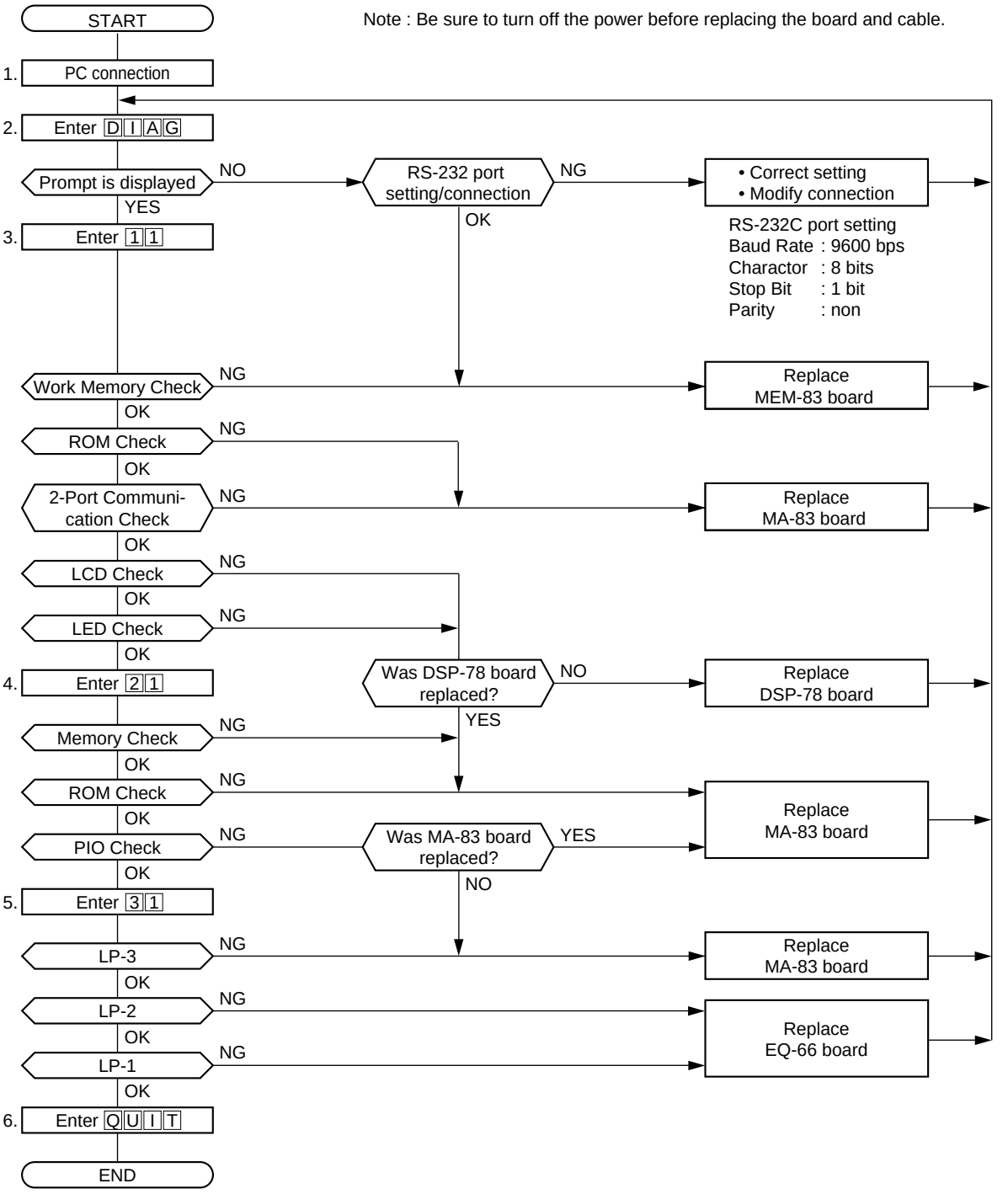
5. Loopback Check

Enter “31” as the menu number. (Perform the All Check in an Loopback block.)

- If the LP-3 Check item is NG, replace the MA-83 board.
- If any of the LP-2 and LP-1 Check items is NG, replace the EQ-66 board.

6. Self-Diagnosis Mode Termination

Enter four characters “QUIT”. The self-diagnostic mode is then terminated.


START
Note : Be sure to turn off the power before replacing the board and cable.
1. PC connection
2. Enter D I A G
Prompt is displayed
NO
RS-232 port setting/connection
NG
• Correct setting
• Modify connection
YES
OK
3. Enter 1 1
RS-232C port setting
Baud Rate : 9600 bps
Charactor : 8 bits
Stop Bit : 1 bit
Parity : non
Work Memory Check
NG
Replace MEM-83 board
OK
ROM Check
NG
OK
2-Port Communi-cation Check
NG
Replace MA-83 board
OK
LCD Check
NG
OK
LED Check
NG
OK
4. Enter 2 1
Was DSP-78 board replaced?
NO
Replace DSP-78 board
YES
Memory Check
NG
OK
ROM Check
NG
Replace MA-83 board
OK
PIO Check
NG
Was MA-83 board replaced?
YES
OK
NO
5. Enter 3 1
LP-3
NG
Replace MA-83 board
OK
LP-2
NG
Replace EQ-66 board
OK
LP-1
NG
OK
6. Enter Q U I T
END

6-3-8. Countermeasures for DIAG Error Codes and List of Maintenance Parts

Error Code	Processing	Replacement Parts List
0120	SCSI-SYS CPU com. check error	MA-83 or GY-2120
0130	LCD Display check error	DSP-78, MA-83 or GY-2120
0140	LED Display check error	DSP-78, MA-83 or GY-2120
0150	SCSI CPU ROM check error	MA-83 or GY-2120
0160	SCSI CPU RAM check error	MA-83 or GY-2120
0220	SYS CPU ROM check error	MA-83 or GY-2120
0230	SYS CPU RAM check error	MA-83 or GY-2120
0320	loopback-3 check error	MA-83 or GY-2120
0330	loopback-2 check error	EQ-66 or GY-2120
0340	loopback-1 check error	EQ-66 or GY-2120
0410	bank memory check error	MEM-83, MA-83 or GY-2120
0520	IF CPU ROM check error	IF-682 or GY-2120
0530	IF CPU RAM check error	IF-682 or GY-2120
1000	Requested tape not instert	-Instert the tape-
1001	Servo unlock in the DIAG	-Retry the same DIAG or Replace the DIAG tape-
1002	Cassette rec inhibit sw ON	-rec inhibit sw OFF-
1003	RF error rate check NG	-readjust, RP or GY-2120 *RP...Upper Drum Assy, EQ-66, SW Regulator
1020	PF PB Level adjust failed	-Readjust, RP or GY-2120
1030	PF PB PLL adjust failed	-Readjust, RP or GY-2120
1040	PF PB Equalizer adjust failed	-Readjust, RP or GY-2120
1050	PF REC current adjust failed	-Readjust, RP or GY-2120
2020	S Reel FG Duty adjust failed	-Readjust, DR-327, MS-54 or GY-2120
2030	T Reel FG Duty adjust failed	-Readjust, DR-327, MS-54 or GY-2120
2040	Capstan FG Duty adjust failed	-Readjust, DR-327, MS-54, MA-83 or GY-2120
2050	S Reel Offset/Friction adj. failed	-Readjust, DR-327, MS-54 or GY-2120
2060	T Reel Offset/Friction adj. failed	-Readjust, DR-327, MS-54 or GY-2120
2070	S Reel Torque adjust failed	-Readjust, DR-327, MS-54 or GY-2120
2080	T Reel Torque adjust failed	-Readjust, DR-327, MS-54 or GY-2120
2090	S/T Tension Offset adj. failed	-Readjust, DR-327, MS-54 or GY-2120
2280	S Reel FG/Motor check error	-Readjust, DR-327, MS-54 or GY-2120
2281	T Reel FG/Motor check error	-Readjust, DR-327, MS-54 or GY-2120
2282	Capstan FG/Motor check error	-Readjust, DR-327, MS-54 or GY-2120
2283	S Reel Offset/Friction check error	-Readjust, DR-327, MS-54 or GY-2120
2284	T Reel Offset/Friction check error	-Readjust, DR-327, MS-54 or GY-2120
2285	S Reel Torque check error	-Readjust, DR-327, MS-54 or GY-2120
2286	T Reel Torque check error	-Readjust, DR-327, MS-54 or GY-2120
9000	Drum Hours meter (replace) reset failed	MS-54
9010	Drum Hours meter (cleaning) reset failed	MS-54
9020	Tape run hours meter reset failed	MS-54
9040	Threading counter reset failed	MS-54

6-4. Electrical Alignment Overview

6-4-1. Equipment Required and Tools

It is recommended to use the equipment listed below or the equivalents.

Equipment/Tool	Model name/Description	Remarks
Oscilloscope	Tektronix 2465B	
Spectrum Analyzer	Advantest R3261A	bandwidth : more than 100 MHz
GY-2120 Control Software*1	remo. exe	
PC*2		IBM PC/AT compatible computer
Terminal Emulator Software		DEC VT100 or equivalent
Alignment Tape	YR2-1	Sony part No. 8-960-074-11
	YR5-1	Sony part No. 8-960-074-01
Recording Tape	DTF Cassette	Tape whose data was all erased
Extension Board	EX-602	Sony part No. A-8312-673-A
Connection Cable	(RS-232C cross cable *3)	To connect PC and GY-2120

*1 : GY-2120 control software (remo. exe) (Refer to Section 1-10.)

*2 : The RS-232C port of the terminal is set as described below.

- For the change in the setting, refer to the operation manual of the PC or the manual of terminal emulator software installed in the PC.

  Baud rate : 9600 bps
  Character : 8 bits
  Stop bit: : 1 bit
  Parity : None

*3 : Prepare this cable according to the RS-232C connector of the PC to be connected, with reference to section 1-4.

Note : Use the calibrated equipment for adjustment.

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6-4-2. Initialize of NV-RAM

The measures (data initialization and adjustment) when the data held in an NV-RAM (non-volatile memory) was lost (during IC or board replacement) are described below.

a. For the operation from personal computer

1. Initialize of RF adjustment data
   Perform “RF09: RF Initial Data Set” at the SV/RF maintenance mode.
2. Initialize of Servo adjustment data
   Perform “S01F: SV Initial Data Set” at the SV/RF maintenance mode.
3. RF adjustment
   Execute the following in the SV/RF Maintenance mode.
   RF01 PB All Adjust
   RF05 REC Current Adjust
   RF07 RF NV-RAM Save

4. Servo adjustment
   Perform the whole servo adjustment (section 6-5) in the SV/RF Maintenance mode.

5. Hours meter preset
   Preset “PRESETHOURS: Hours Meter” in the SV/RF Maintenance mode.

b. For the operation from front panel

For more details of execution, refer to section 6-3-4.

1. Initialization of RF adjustment data
   Execute “DIAG:109:RF Initial Data Set” using the DIAG hole on the front panel.

2. Initialization of servo adjustment data
   Execute “DIAG:231:Servo Initial Data Set” using the DIAG hole on the front panel.

3. RF adjustment
   Execute the following using the DIAG hole on the front panel.
   DIAG:101 PB All Adjust
   DIAG:105 REC Current Adjust
   DIAG:107 RF NV-RAM Save

4. Servo adjustment
   Perform the whole servo adjustment (section 6-7-3) from the front panel using the DIAG hole on the front panel.

5. Hours meter preset
   Preset the hours meter in the same way as when a personal computer is used because it cannot be preset from the front panel.

6-4-3. Electrical Adjustment Items after Board Replacement

The electrical adjustment that is performed after board replacement is described below (executed in the description order). The boards that are not described require no electrical adjustment after board replacement.

Note

Perform these adjustment in the description order.

MS-54 board (Initialize the data in an NV-RAM with reference to Section 6-4-2.)

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	SV01 : Reel/Capstan All Adjust
6-5-10.	Free Speed Automatic Adjustment	SV0A : Free Speed Adjust
6-5-11.	Drum Phase Automatic Adjustment	SV0B : RF Switching Position Adjust
6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
6-6-1.	PB All Automatic Adjustment	RF01 : PB All Adjust
6-6-5.	REC Current Automatic Adjustment	RF05 : REC Current Adjust
6-6-6.	Saves RF Adjustments Data	RF07 : RF NV-RAM Save
6-5-13.	Automatic-Tracking Function Check	SV1D : SAT Function Check
1-11.	GY-2120 SCSI Control Software scsitool.exe	

MA-83 board

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	SV01 : Reel/Capstan All Adjust
6-5-10.	Free Speed Automatic Adjustment	SV0A : Free Speed Adjust
6-5-11.	Drum Phase Automatic Adjustment	SV0B : RF Switching Position Adjust
6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
6-2-4.	Vendor Information Set Mode	VEND menu [2]
6-2-5.	Service Set Mode	SERV menu [1]
1-11.	GY-2120 SCSI Control Software scsitool.exe	

EQ-66 board

No.	Adjustment title	Adjustments
6-6-1.	PB All Automatic Adjustment	RF01 : PB All Adjust
6-6-5.	REC Current Automatic Adjustment	RF05 : REC Current Adjust
6-6-6.	Saves RF Adjustments Data	RF07 : RF NV-RAM Save
6-5-13.	Automatic-Tracking Function Check	SV1D : SAT Function Check
5-10.	CH ERASE Signal Check	⊘LV701/EQ-66 board
1-11.	GY-2120 SCSI Control Software scsitool.exe	

DSP-78 board

No.	Adjustment title	Adjustments
6-2-1.	DIAG ALL Check	DIAG menu [1]
1-11.	GY-2120 SCSI Control Software scsitool.exe	

IF-682/683 board

No.	Adjustment title	Adjustments
6-2-1.	DIAG ALL Check	DIAG menu [1]
1-11.	GY-2120 SCSI Control Software scsitool.exe	

MEM-83 board

	No.	Adjustment title	Adjustments
	6-2-1.	DIAG ALL Check	DIAG menu [1]
	1-11.	GY-2120 SCSI Control Software scsitool.exe	

DR-327 board

	No.	Adjustment title	Adjustments
	6-5-1.	Reel/Capstan System All Automatic Adjustment	SV01 : Reel/Capstan All Adjust
	6-5-10.	Free Speed Automatic Adjustment	SV0A : Free Speed Adjust
	6-5-11.	Drum Phase Automatic Adjustment	SV0B : RF Switching Position
Adjust	6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
	6-5-13.	Automatic-Tracking Function Check	SV1D : SAT Function Check
	1-11.	GY-2120 SCSI Control Software scsitool.exe	

6-4-4. Electrical Adjustment Items after DC-DC Converter Replacement

The electrical adjustment that is performed after DC-DC converter replacement is described below

Note

Perform the adjustment after replacing the switching regulator in the description order.

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	SV01：Reel/Capstan All Adjust
6-5-10.	Free Speed Automatic Adjustment	SV0A：Free Speed Adjust
6-5-11.	Drum Phase Automatic Adjustment	SV0B：RF Switching Position Adjust
6-5-12.	Saves SV Adjustments Data	SV0C：SV NV-RAM Save
6-6-1.	PB System All Automatic Adjustment	RF01：PB All Adjust
6-6-5.	REC Current Automatic Adjustment	RF05：REC Current Adjust
6-6-6.	Saves RF Adjustments Data	RF07：RF NV-RAM Save
6-2-1.	DIAG all Check	DIAG menu [1]
1-11.	GY-2120 SCSI Control Software scsitool.exe	

6-4-5. Electrical Adjustment Items after Mechanical Parts Replacement

The electrical adjustment that is performed after mechanical parts replacement is described below (executed in the description order). The boards that are not described require no electrical adjustment after board replacement.

Note

Perform these adjustment in the description order.

Drum assembly or Inner drum assembly

No.	Adjustment title	Adjustments
6-5-11.	Drum Phase Automatic Adjustment	SV0B : RF Switching Position Adjust
6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
6-6-1.	PB All Automatic Adjustment	RF01 : PB All Adjust
6-6-5.	REC Current Automatic Adjustment	RF05 : REC Current Adjust
6-6-6.	Saves RF Adjustments Data	RF07 : RF NV-RAM Save
6-5-13.	Automatic-Tracking Function Check	SV1D : SAT Function Check
1-11.	GY-2120 SCSI Control Software scsitool.exe	

Capstan motor

No.	Adjustment title	Adjustments
6-5-4.	Capstan FG Duty Automatic Adjustment	SV04 : Capstan FG Duty Adjust
6-5-10.	Free Speed Automatic Adjustment	SV0A : Free Speed Adjust
6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
6-5-13.	Automatic-Tracking Function Check	SV1D : SAT Function Check
1-11.	GY-2120 SCSI Control Software scsitool.exe	

S reel motor assembly or S reel brake solenoid

No.	Adjustment title	Adjustments
6-5-2.	S Reel FG Duty Automatic Adjustment	SV02 : S Reel FG Duty Adjust
6-5-5.	S Reel Motor Offset/Friction Automatic Adjustment	SV05 : S Reel offset/friction Adjust
6-5-7.	S Reel Motor Torque Automatic Adjustment	SV07 : S Reel Torque Adjust
6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
1-11.	GY-2120 SCSI Control Software scsitool.exe	

T reel motor assembly or T reel brake solenoid

No.	Adjustment title	Adjustments
6-5-3.	T Reel FG Duty Automatic Adjustment	SV03 : T Reel FG Duty Adjust
6-5-6.	T Reel Motor Offset/Friction Automatic Adjustment	SV06 : T Reel offset/friction Adjust
6-5-8.	T Reel Motor Torque Automatic Adjustment	SV08 : T Reel Torque Adjust
6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
1-11.	GY-2120 SCSI Control Software scsitool.exe	

S reel table assembly

No.	Adjustment title	Adjustments
6-5-2.	S Reel FG Duty Automatic Adjustment	SV02 : S Reel FG Duty Adjust
6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
1-11.	GY-2120 SCSI Control Software scsitool.exe	

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T reel table assembly

No.	Adjustment title	Adjustments
6-5-3.	T Reel FG Duty Automatic Adjustment	SV03 : T Reel FG Duty Adjust
6-5-12.	Saves SV Adjustments Data	SV0C : SV NV-RAM Save
1-11.	GY-2120 SCSI Control Software scsitool.exe	

6-5. Servo System Alignment

Adjust each component in the order below when repairs and component replacement were performed in the electric circuit of a servo system. For the connection of equipment, refer to Section 1-1-1.

Note

No.2 to No. 9 do not require to be executed when executing No.1.
Execute No.1 instead when executing No.2 to No.9.

Item

No.	Adjustment title	Adjustments	Remarks
1	Reel/Capstan System All Automatic Adjustment	SV01 : Reel/Capstan All Adjust	
2	S Reel FG Duty Automatic Adjustment	SV02 : S Reel FG Duty Adjust	
3	T Reel FG Duty Automatic Adjustment	SV03 : T Reel FG Duty Adjust	
4	Capstan FG Duty Automatic Adjustment	SV04 : Capstan FG Duty Adjust	
5	S Reel Motor Offset/Friction Automatic Adjustment	SV05 : S Reel offset/friction Adjust	
6	T Reel Motor Offset/Friction Automatic Adjustment	SV06 : T Reel offset/friction Adjust	
7	S Reel Motor Torque Automatic Adjustment	SV07 : S Reel Torque Adjust	
8	T Reel Motor Torque Automatic Adjustment	SV08 : T Reel Torque Adjust	
9	S/T Tension Regulator Offset Automatic Adjustment	SV09 : S/T Tension offset Adjust	
10	Free Speed Automatic Adjustment	SV0A : Free Speed Adjust	
11	Drum Phase Automatic Adjustment	SV0B : RF Switching Position Adjust	
12	Saves SV Adjustments Data	SV0C : SV NV-RAM Save	
13	Automatic-Tracking Function Check	SV1D : SAT Function Check	

Equipment and tool

- Alignment Tape YR2-1 (Sony part No. 8-960-074-01)
- Alignment Tape YR5-1 (Sony part No. 8-960-074-11)
- PC (IBM PC/AT compatible machine)
- Terminal Emulator Software (DEC VT100 or equivalent)
- RS-232C cross cable
- GY-2120 control software (remo.exe) (Refer to 1-10.)

6-5-1. Reel/Capstan System All Automatic Adjustment

Note

Sections 6-5-2 through 6-5-9 are not required when this adjustment is performed.

For explanation of SV01: Reel/Capstan All Adjust, refer to Section 6-2.

(1) Enter SV01: Reel/Capstan All Adjust.

(2) Press the Y key to initiate adjustment.

(3) When the adjustment succeeds, message “ALL Adjust Complete” is displayed.

(4) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

```
------>SV01
Servo Adjust [Auto Adjust]

  Reel/Capstan All Adjust

   Are you ready (y/n)? Yes

  S Reel FG Duty Adjust....OK
  T Reel FG Duty Adjust....OK
  Capstan FG Duty Adjust....OK
  S Reel offset/friction Adjust....OK
  T Reel offset/friction Adjust....OK
  S Reel Torque Adjust....OK
  T Reel Torque Adjust....OK
  S/T Tension offset Adjust....OK

    ALL Adjust Complete

------>_
```

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-2. S Reel FG Duty Automatic Adjustment

For explanation of SV02: S Reel FG Duty Adjust, refer to Section 6-2.

(1) Enter SV02: S Reel FG Duty Adjust.

```
------>SV02
Servo Adjust [Auto Adjust]

  S Reel FG Duty Adjust

    Adjust Complete

------>_
```

(2) When the adjustment succeeds, message “Adjust Complete” is displayed.
(3) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-3. T Reel FG Duty Automatic Adjustment

For explanation of SV03: T Reel FG Duty Adjust, refer to Section 6-2.

(1) Enter SV03: T Reel FG Duty Adjust.

```
------>SV03
Servo Adjust [Auto Adjust]

  T Reel FG Duty Adjust

    Adjust Complete

------>_
```

(2) When the adjustment succeeds, message “Adjust Complete” is displayed.
(3) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-4. Capstan FG Duty Automatic Adjustment

For explanation of SV04: Capstan FG Duty Adjust, refer to Section 6-2.

(1) Enter SV04: Capstan FG Duty Adjust.

```
------>SV04
Servo Adjust [Auto Adjust]

  Capstan FG Duty Adjust

    Adjust Complete

------>_
```

(2) When the adjustment succeeds, message “Adjust Complete” is displayed.
(3) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-5. S Reel Motor Offset/Friction Automatic Adjustment

For explanation of SV05: S Reel offset/friction Adjust, refer to Section 6-2.

(1) Enter SV05: S Reel offset/friction Adjust.

```
------>SV05
Servo Adjust [Auto Adjust]

  S Reel offset/fricton Adjust

    Adjust Complete

------>_
```

(2) When the adjustment succeeds, message “Adjust Complete” is displayed.
(3) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-6. T Reel Motor Offset/Friction Automatic Adjustment

For explanation of SV06: T Reel offset/friction Adjust, refer to Section 6-2.

(1) Enter SV06: T Reel offset/friction Adjust.

```
------>SV06
Servo Adjust [Auto Adjust]

  T Reel offset/fricton Adjust

    Adjust Complete

------>_
```

(2) When the adjustment succeeds, message “Adjust Complete” is displayed.
(3) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-7. S Reel Motor Torque Automatic Adjustment

For explanation of SV07: S Reel Torque Adjust, refer to Section 6-2.

(1) Enter SV07: S Reel Torque Adjust.

```
------>SV07
Servo Adjust [Auto Adjust]

  S Reel Torque Adjust

    Adjust Complete

------>_
```

(2) When the adjustment succeeds, message “Adjust Complete” is displayed.
(3) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-8. T Reel Motor Torque Automatic Adjustment

For explanation of SV08: T Reel Torque Adjust, refer to Section 6-2.

(1) Enter SV08: T Reel Torque Adjust.

```
------>SV08
Servo Adjust [Auto Adjust]

  T Reel Torque Adjust

    Adjust Complete

------>_
```

(2) When the adjustment succeeds, message “Adjust Complete” is displayed.
(3) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-9. S/T Tension Regulator Offset Automatic Adjustment

For explanation of SV09: S/T Tension offset Adjust, refer to Section 6-2.

(1) Enter SV09: S/T Tension offset Adjust.

```
------>SV09
Servo Adjust [Auto Adjust]

  S/T Tension offset Adjust

    Adjust Complete

------>_
```

(2) When the adjustment succeeds, message “Adjust Complete” is displayed.
(3) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-10. Free Speed Automatic Adjustment

Prepares an alignment tape YR2-1. (Adjustment start tape address: IDR: 0 through 54000)
- To move the tape address during adjustment start, use the control software of GY-2120 (after insertion of the cassette).

For explanation of SV0A: Free Speed Adjust, refer to Section 6-2.

(1) Enter SV0A: Free Speed Adjust.

(2) Insert the alignment tape YR2-1.
(3) Press the Y key to initiate adjustment.

(4) When the adjustment succeeds, message “Adjust Complete” is displayed.
   * When message “(Tape end detected)” is displayed, rewind the tape to tape top, then readjust.
(5) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

```
------>SV0A
Servo Adjust [Auto Adjust]

  Free Speed Adjust

   Set YR2-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

------>_
```

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-11. Drum Phase Automatic Adjustment

Prepares an alignment tape YR2-1. (Adjustment start tape address: IDR: 0 through 54000)
- To move the tape address during adjustment start, use the control software of GY-2120 (after insertion of the cassette).

For explanation of SV0B: RF Switching Position Adjust, refer to Section 6-2.

(1) Enter SV0B: RF Switching Position Adjust.

(2) Insert the alignment tape YR2-1.
(3) Press the Y key to initiate adjustment.

(4) When the adjustment succeeds, message “Adjust Complete” is displayed.
   * When message “(Tape end detected)” is displayed, rewind the tape to tape top, then readjust.
(5) If necessary, enter SV0C: SV NV-RAM Save (Refer to Section 6-5-12).

```
------>SV0B
Servo Adjust [Auto Adjust]

  RF Switching Position Adjust

   Set YR2-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

------>_
```

Note

It takes time to terminate the command when an SV0C command is executed. To perform other servo adjustments continuously, execute the SV0C command after all the servo adjustments are completed.

6-5-12. Saves SV Adjustments Data

For explanation of SV0C: SV NV-RAM Save, refer to Section 6-2.

(1) Enter SV0C: SV NV-RAM Save.

(2) Press the Y key to save the adjustment data into NV-RAM.

(3) When the saving of the data is completed, messages "Saving NV-RAM....OK" is displayed.

```
------>SV0C
Servo Adjust [NV-RAM Control]

  SV NV-RAM Save

   Are you ready (y/n)? Yes

    Saving NV-RAM1....OK
    Saving NV-RAM2....OK

    Data Saved

------>_
```

6-5-13. Automatic-Tracking Function Check

Prepares an alignment tape YR5-1. (Check start tape address: IDR: 0 through 72000)

- To move the tape address during check start, use the control software of GY-2120 (after insertion of the cassette).

For explanation of SV1D: SAT Function Chack, refer to Section 6-2.

(1) Enter SV1D: SAT Function Check

(2) Insert the alignment tape YR5-1.

(3) Press the Y key to initiate the check.

(4) Confirm that the messages "Check Complete" is displayed.

* When message "(Tape end detected)" is displayed, rewind the tape to tape top, then check again.

```
------>SV1D
Servo Check

  SAT Function Check

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

     Auto Check Start
       Check Complete

------>_
```

6-6. RF System Alignment

Adjust each component in the order below when repairs and component replacement were performed in the electric circuit of an RF system. For the connection of equipment, refer to Section 6-1-1.

Note

Execute No.1 instead when executing No.2 to No.4.

Item

No.	Adjustment title	Board name	Adjustments	Remarks
1	PB All Automatic Adjustment		RF01 : PB All Adjust	
2	PB Level Automatic Adjustment		RF02 : PB Level Adjust	
3	PB PLL Automatic Adjustment		RF03 : PB PLL Adjust	
4	PB Equalizer Automatic Adjustment		RF04 : PB Equalizer Adjust	
5	REC Current Automatic Adjustment		RF05 : REC Current Adjust	
6	Saves RF Adjustments Data		RF07 : RF NV-RAM Save	

Equipment and tool

- Alignment Tape YR5-1 (Sony part No. 8-960-074-11)
- Blank tape (DTF cassette tape)
- PC (IBM PC/AT compatible computer)
- Terminal Emulator Software (DEC VT100 or equivalent)
- RS-232C cross cable
- GY-2120 control software (remo.exe) (Refer to Section 1-10.)

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6-6-1. PB All Automatic Adjustment

Note

When this adjustment is performed, 6-6-2. PB Level Automatic Adjustment, 6-6-3. PLL Automatic Adjustment, and 6-6-4. PB Equalizer Automatic Adjustment are not required.

Prepares an alignment tape YR5-1. (Adjustment start tape address: IDR: 0 through 72000)

- To move the tape address during adjustment start, use the control software of GY-2120 (after insertion of the cassette).

For explanation of RF01: PB All Adjust, refer to Section 6-2.

(1) Enter RF01: PB All Adjust.

(2) Insert the alignment tape YR5-1.

(3) Press the Y key to initiate adjustment.

(4) When the adjustment succeeds, message “ALL Adjust Complete” is displayed.
   * When message “(Tape end detected)” is displayed, rewind the tape to tape top, then readjust.

(5) If necessary, enter RF07: RF NV-RAM Save (Refer to Section 6-6-6).

```
------>RF01
RF Adjust [Auto Adjust]

  PB All Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

  PB PLL Adjust....OK
  PB Level Adjust....OK
  PB Equalizer Adjust....OK
  PB Level Adjust....OK

    ALL Adjust Complete

------>_
```

6-6-2. PB Level Automatic Adjustment

Prepares an alignment tape YR5-1. (Adjustment start tape address: IDR: 0 through 72000)

- To move the tape address during adjustment start, use the control software of GY-2120 (after insertion of the cassette).

For explanation of RF02: PB Level Adjust, refer to Section 6-2.

(1) Enter RF02: PB Level Adjust.

(2) Insert the alignment tape YR5-1.

(3) Press the Y key to initiate adjustment.

(4) When the adjustment succeeds, message “Adjust Complete” is displayed.

* When message “(Tape end detected)” is displayed, rewind the tape to tape top, then readjust.

Note

The adjustment data in the right figure is one example. The value will be changed according to the condition.

(5) If necessary, enter RF07: RF NV-RAM Save (Refer to Section 6-6-6).

```
------>RF02
RF Adjust [Auto Adjust]

  PB Level Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

   Ach  PB Level  75
   Bch  PB Level  7E
   Cch  PB Level  75
   Dch  PB Level  81

------>_
```

6-6-3. PB PLL Automatic Adjustment

Prepares an alignment tape YR5-1. (Adjustment start tape address: IDR: 0 through 72000)

- To move the tape address during adjustment start, use the control software of GY-2120 (after insertion of the cassette).

For explanation of RF03: PB PLL Adjust, refer to Section 6-2.

(1) Enter RF03: PB PLL Adjust.

```
------>RF03
RF Adjust [Auto Adjust]

  PB PLL Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

   A/Cch  PLL  80
   B/Dch  PLL  80

------>_
```

(2) Insert the alignment tape YR5-1.

(3) Press the Y key to initiate adjustment.

(4) When the adjustment succeeds, message “Adjust Complete” is displayed.

* When message “(Tape end detected)” is displayed, rewind the tape to tape top, then readjust.

Note

The adjustment data in the right figure is one example. The value will be changed according to the condition.

(5) If necessary, enter RF07: RF NV-RAM Save (Refer to Section 6-6-6).

6-6-4. PB Equalizer Automatic Adjustment

Prepares an alignment tape YR5-1. (Adjustment start tape address: IDR 0 through 72000)

- To move the tape address during adjustment start, use the control software of GY-2120 (after insertion of the cassette).

For explanation of RF04: PB Equalizer Adjust, refer to Section 6-2.

(1) Enter RF04: PB Equalizer Adjust.

(2) Insert the alignment tape YR5-1.

(3) Press the Y key to initiate adjustment.

(4) When the adjustment succeeds, message “Adjust Complete” is displayed.

* When message “(Tape end detected)” is displayed, rewind the tape to tape top, then readjust.

Note

The adjustment data in the right figure is one example. The value will be changed according to the condition.

(5) If necessary, enter RF07: RF NV-RAM Save (Refer to Section 6-6-6).

```
------>RF04
RF Adjust [Auto Adjust]

  PB Equalizer Adjust

   Set YR5-1 (Alignment Tape)
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

   Ach  Gain 76  Phase 79
   Bch  Gain 84  Phase 75
   Cch  Gain 6E  Phase 6A
   Dch  Gain 72  Phase 7F

------>_
```

6-6-5. REC Current Automatic Adjustment

Prepares a blank tape.

- To move the tape address during adjustment start, use the control software of GY-2120 (after insertion of the cassette).

For explanation of RF05: REC Current Adjust, refer to Section 6-2.

(1) Enter RF05: REC Current Adjust.

(2) Insert the blank tape.
(3) Press the Y key to initiate adjustment.

(4) When the adjustment succeeds, message “Adjust Complete” is displayed.
   * When message “(Tape end detected)” is displayed, rewind the tape to tape top, then readjust.

   Note

   The adjustment data in the right figure is one example. The value will be changed according to the condition.

(5) If necessary, enter RF07: RF NV-RAM Save (Refer to Section 6-6-6).

```
------>RF05
RF Adjust [Auto Adjust]

  REC Current Adjust

   Set Blank Tape
     Are you ready (y/n/else=Eject)? Yes

    Adjust Complete

   Ach  REC Current  80
   Bch  REC Current  80
   Cch  REC Current  80
   Dch  REC Current  80

------>_
```

6-6-6. Saves RF Adjustments Data

For explanation of RF07: RF NV-RAM Save, refer to Section 6-2.

(1) Enter RF07: RF NV-RAM Save.

(2) Press the Y key to save the adjustment data into NV-RAM.
(3) When the saving of the data is completed, message “Saving....OK” is displayed.

```
------>RF07
RF Adjust [NV-RAM Control]

  RF NV-RAM Save

   Are you ready (y/n)? Yes

    Saving....OK

    Data Saved

------>_
```

6-7. Adjustment from Front Panel

The case where the adjustment is not performed from a personal computer but the front panel when the electric circuit and mechanical parts in a servo or RF system are repaired and replaced is described.

6-7-1. Electrical Adjustment after Board Replacement

Execute the following item when the electrical adjustment required after board replacement is performed from the front panel.
For more details of execution, refer to section 6-7-3.

Note

The electrical adjustment after board replacement must be performed in the order described.

MS-54 board (Initialize the data in NV-RAM beforehand while referring to section 6-4-2.)

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	DIAG：201 Reel/Capstan All Adjust
6-5-10.	Free Speed Automatic Adjustment	DIAG：210 Free Speed Adjust
6-5-11.	Drum Phase Automatic Adjustment	DIAG：211 RF Switching Position Adjust
6-5-12.	Saves SV Adjustments Data	DIAG：212 SV NV-RAM Save
6-6-1.	PB All Automatic Adjustment	DIAG：101 PB All Adjust
6-6-5.	REC Current Automatic Adjustment	DIAG：105 REC Current Adjust
6-6-6.	Saves RF Adjustments Data	DIAG：107 RF NV-RAM Save
6-5-13.	Automatic-Tracking Function Check	DIAG：229 SAT Function Check

MA-83 board

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	DIAG：201 Reel/Capstan All Adjust
6-5-10.	Free Speed Automatic Adjustment	DIAG：210 Free Speed Adjust
6-5-11.	Drum Phase Automatic Adjustment	DIAG：211 RF Switching Position Adjust
6-5-12.	Saves SV Adjustments Data	DIAG：212 SV NV-RAM Save

EQ-66 board

No.	Adjustment title	Adjustments
6-6-1.	PB All Automatic Adjustment	DIAG：101 PB All Adjust
6-6-5.	REC Current Automatic Adjustment	DIAG：105 REC Current Adjust
6-6-6.	Saves RF Adjustments Data	DIAG：107 RF NV-RAM Save
6-5-13.	Automatic-Tracking Function Check	DIAG：229 SAT Function Check
5-10.	CH ERASE Signal Check	⊘LV701/EQ-66 board

DSP-78 board

No.	Adjustment title	Adjustments
6-2-1.	DIAG ALL Check	DIAG：001 digital all check

IF-682/683 board

No.	Adjustment title	Adjustments
6-2-1.	DIAG ALL Check	DIAG：001 digital all check

MEM-83 board

No.	Adjustment title	Adjustments
6-2-1.	DIAG ALL Check	DIAG：001 digital all check

DR-327 board

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	DIAG：201 Reel/Capstan All Adjust
6-5-10.	Free Speed Automatic Adjustment	DIAG：210 Free Speed Adjust
6-5-11.	Drum Phase Automatic Adjustment	DIAG：211 RF Switching Position Adjust
6-5-12.	Saves SV Adjustments Data	DIAG：212 SV NV-RAM Save
6-5-13.	Automatic-Tracking Function Check	DIAG：229 SAT Function Check

6-7-2. Electrical Adjustment after Mechanical Part Replacement

Execute the following item when the electrical adjustment required after mechanical part replacement is performed from the front panel.
For more details of execution, refer to section 6-7-3.

Note

The electrical adjustment after mechanical part replacement must be executed in the order described.

Drum assembly or upper drum assembly

No.	Adjustment title	Adjustments
6-5-11.	Drum Phase Automatic Adjustment	DIAG : 211 RF Switching Position Adjust
6-6-1.	PB All Automatic Adjustment	DIAG : 101 PB All Adjust
6-6-5.	REC Current Automatic Adjustment	DIAG : 105 REC Current Adjust
6-5-13.	Automatic-Tracking Function Check	DIAG : 229 SAT Function Check
6-5-12.	Saves SV Adjustments Data	DIAG : 212 SV NV-RAM save
		DIAG : 232 Tracking Auto Check
6-6-6.	Saves RF Adjustments Data	DIAG : 107 RF NV-RAM save
	or	
	Servo/RF All Automatic Adjustment	DIAG : 300 Servo/RF All Adjust

Capstan motor

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	DIAG : 201 Reel/Capstan All Adjust
6-5-10.	Free Speed Automatic Adjustment	DIAG : 210 Free Speed Adjust
6-5-12.	Saves SV Adjustments Data	DIAG : 212 SV NV-RAM save
6-5-13.	Automatic-Tracking Function Check	DIAG : 229 SAT Function Check

S reel motor assembly or S reel brake solenoid

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	DIAG : 201 Reel/Capstan All Adjust
6-5-12.	Saves SV Adjustments Data	DIAG : 212 SV NV-RAM save

T reel motor assembly or T reel brake solenoid

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	DIAG : 201 Reel/Capstan All Adjust
6-5-12.	Saves SV Adjustments Data	DIAG : 212 SV NV-RAM save

S reel table assembly

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	DIAG : 201 Reel/Capstan All Adjust
6-5-12.	Saves SV Adjustments Data	DIAG : 212 SV NV-RAM save

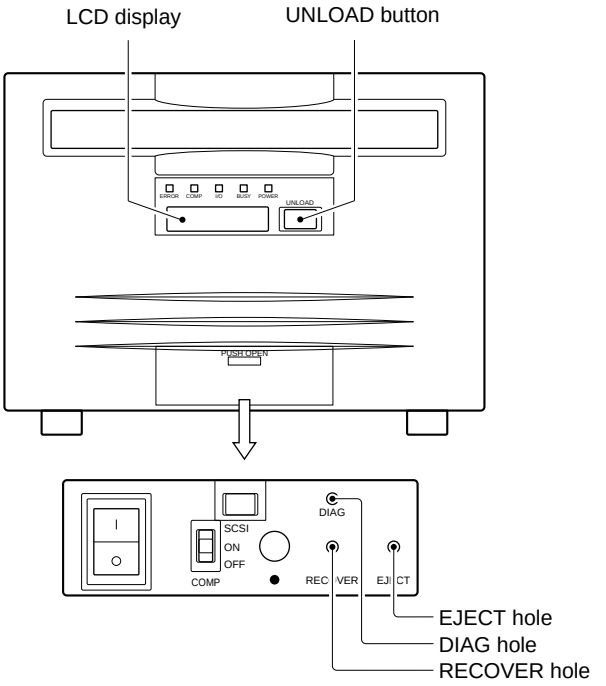
T reel table assembly

No.	Adjustment title	Adjustments
6-5-1.	Reel/Capstan System All Automatic Adjustment	DIAG : 201 Reel/Capstan All Adjust
6-5-12.	Saves SV Adjustments Data	DIAG : 212 SV NV-RAM save

6-7-3. Execution Example of Electrical Adjustment

An execution example of the electrical adjustment when the drum assembly or upper drum assembly is replaced is given below.

1. Activation of DIAG
   Press the DIAG hole on the front panel continuously for approximately two seconds.



2. DIAG menu selection
   Press the UNLOAD button on the front panel to select DIAG No. 300 (Servo/RF All Adjust).

<LCD display>

DIAG: 300

3. Execution of electrical adjustment
   Press the RECOVER hole on the front panel.

<LCD display>

Insert YR2 Tape

Insert the YR2-1 alignment tape. The LCD will change as shown on the right, and RF Switching Position Adjust will be executed.

<LCD display>

DIAG: 300 #

When execution is completed, the tape will automatically be ejected, and the LCD will display as shown in the right.

<LCD display>

Insert YR2 Tape

Insert the YR2-1 alignment tape. The LCD will change as shown on the right, and Tracking Auto Check will be executed.

<LCD display>

DIAG: 300 #

When execution is completed, the tape will automatically be ejected, and the LCD will display as shown in the right.

<LCD display>

Insert YR5 Tape

Insert the YR5-1 alignment tape. The LCD will change as shown on the right, and PB ALL Adjust will be executed.

<LCD display>

DIAG: 300 #

When execution is completed, the tape will automatically be ejected, and the LCD will display as shown in the right.

<LCD display>

Insert Blnk Tape

Insert a blank tape. In this case, the LCD display changes as shown on the right, and “REC Current Adjust” is executed.

<LCD display>

DIAG: 300 #

After execution is completed, the tape is automatically ejected and the display on the right appears on the LCD display.

<LCD display>

Insert YR5 Tape

Insert alignment tape YR5-1. In this case, the LCD display changes as shown on the right, and “SAT Function Check” is executed.

<LCD display>

DIAG: 300 #

When execution is completed, the tape will automatically be ejected, the adjustment data for the servo system and RF system will be saved in the NV RAM, and the LCD will display as shown below.

<LCD display>

DIAG: 300 0000

Adjustment is completed.

4. End of DIAG
   Press the DIAG hole on the front panel continuously for approximately two seconds.

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Section 7
Spare Parts

7-1. Notes on Spare Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some spare parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

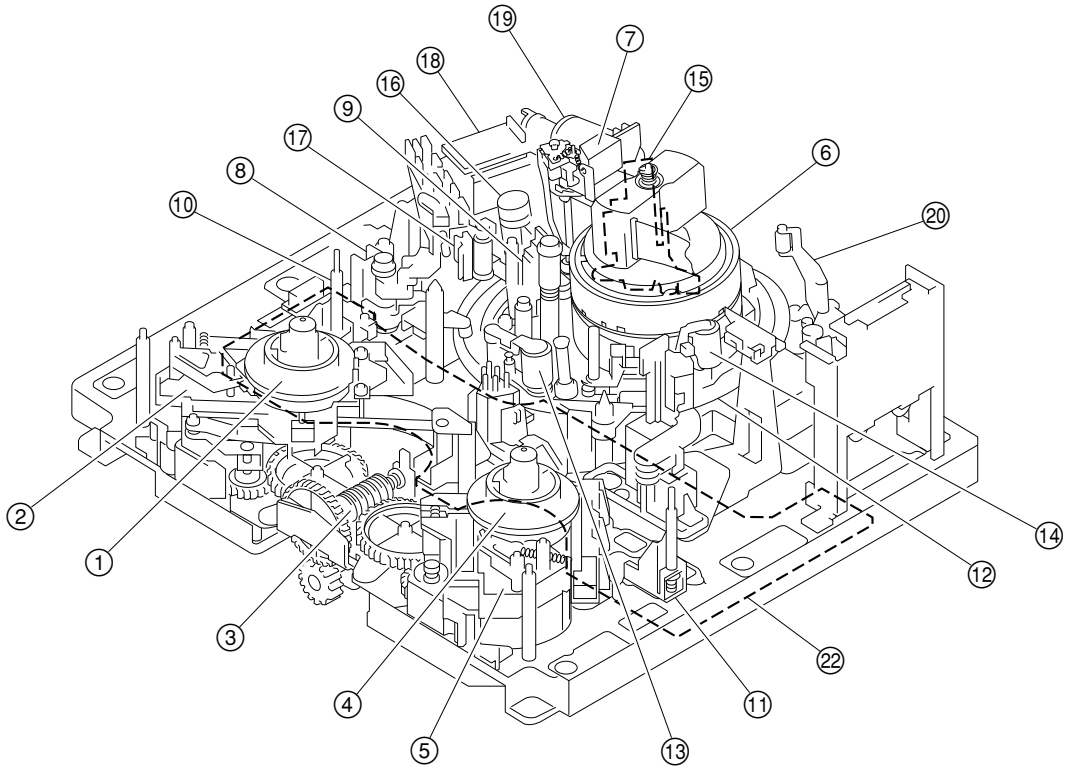
3. Stock of Parts

Parts marked with “o” at SP(Supply Code) column of the spare parts list may be not stocked. Therefore, the delivery date will be delayed.

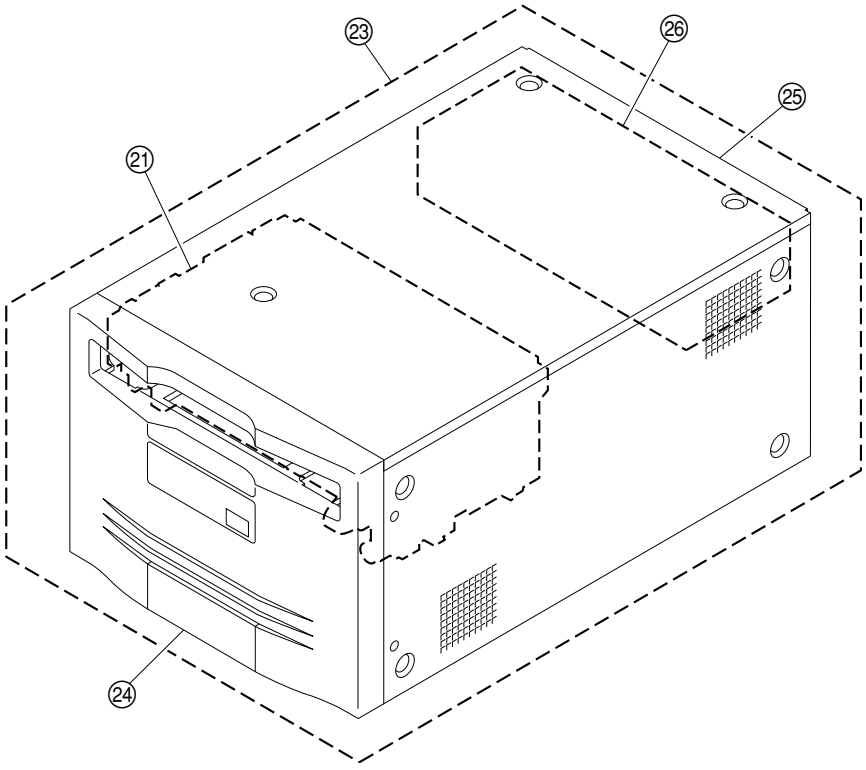
7-2. Exploded Views

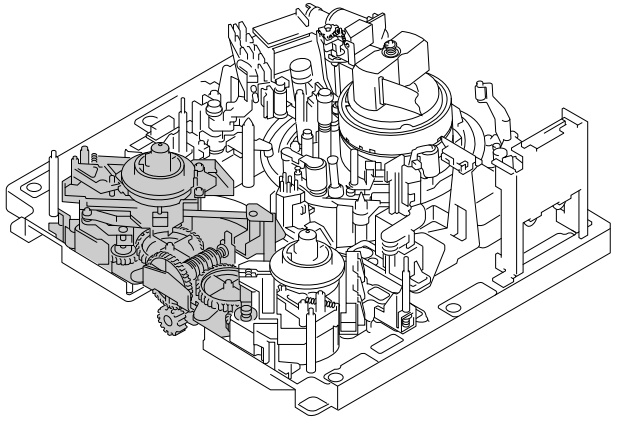
Mark	Item	Title	Page
①	S Reel Table	Reel Chassis (S Side) Block	7-4
②	RS Table (S)		
③	Reel Shift		
④	T Reel Table	Reel Chassis (T Side) Block	7-6
⑤	RS Table (T)		
⑥	Head Drum	Drum and Rotary Head Cleaner Block	7-8
⑦	Rotary Head Cleaner		
⑧	Tension Regulator	FE Head and S Tension Regulator Block	7-10
⑨	FE Head		
⑩	MR Sensor (left)		
⑪	MR Sensor (right)		
⑫	Threading Ring	Threading Ring and Pinch Roller Block	7-12
⑬	Pinch Roller		
⑭	CTL/TC Head Cleaner		
⑮	CTL/TC Head	CTL/TC Head and Capstan Motor Block	7-14
⑯	Capstan Motor		
⑰	Tape Cleaner		
⑱	Pinch Press	Pinch Press and Gear Box Block	7-16
⑲	Gear Box Motor		
⑳	T Tension Regulator	T Tension Regulator Block	7-18
㉑	Cassette Compartment	Cassette Compartment Block	7-20
㉒	Printed Circuit Board	Printed Circuit Board (Bottom Side) Block	7-22
㉓	Top Plate	Ornamental Panel Block	7-24
	Bottom Plate		
	Ornamental Panel		
㉔	Front Panel	Front Panel Block	7-26
㉕	Connector Panel	Connector Panel Block	7-28
㉖	Power Block		

Mechanical Deck

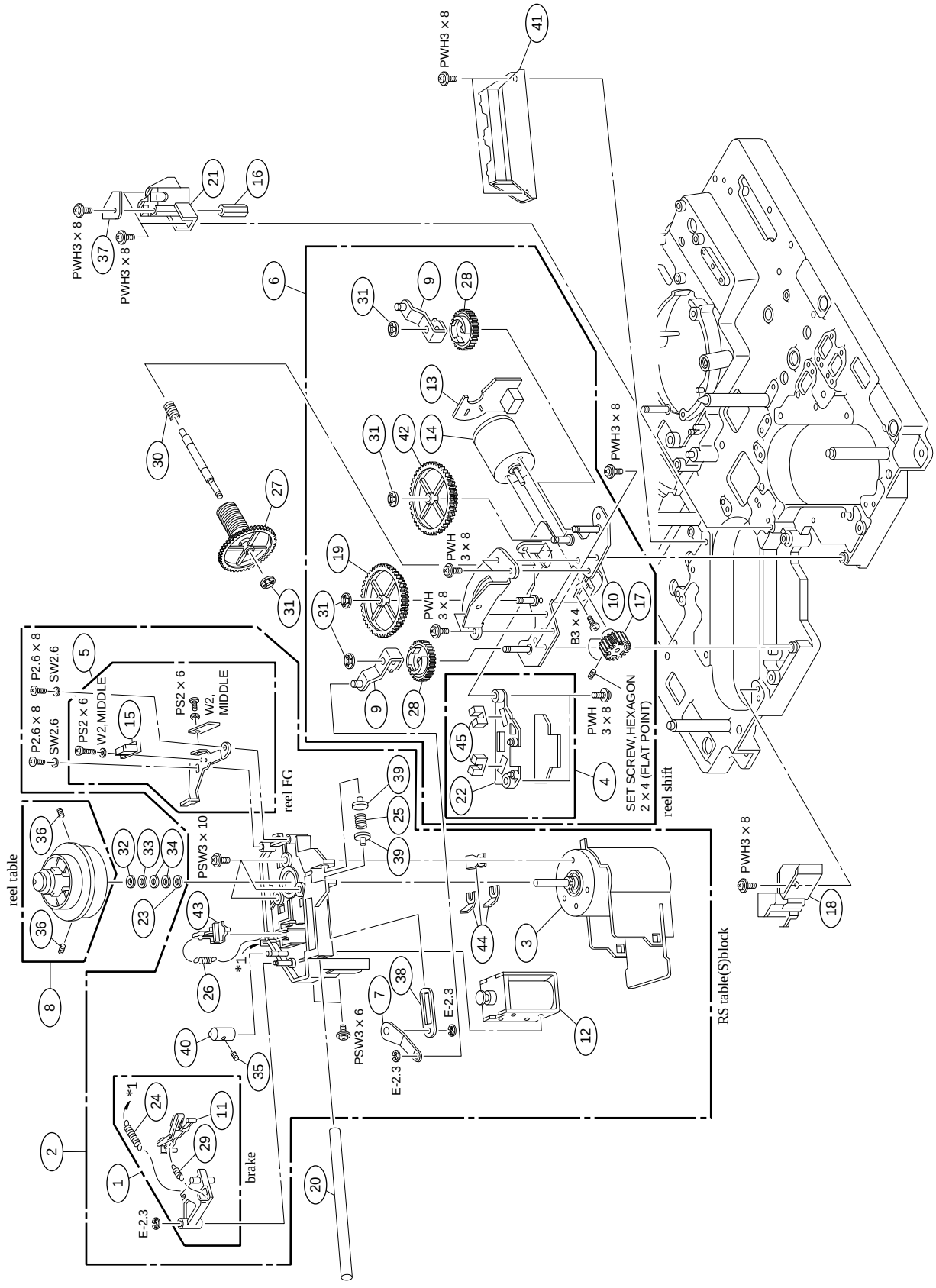


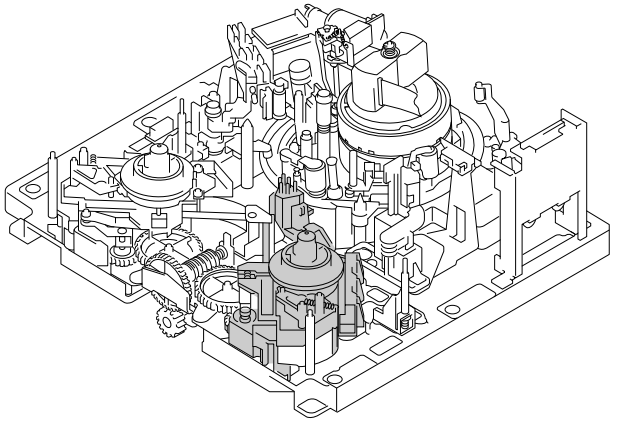
Overall Block





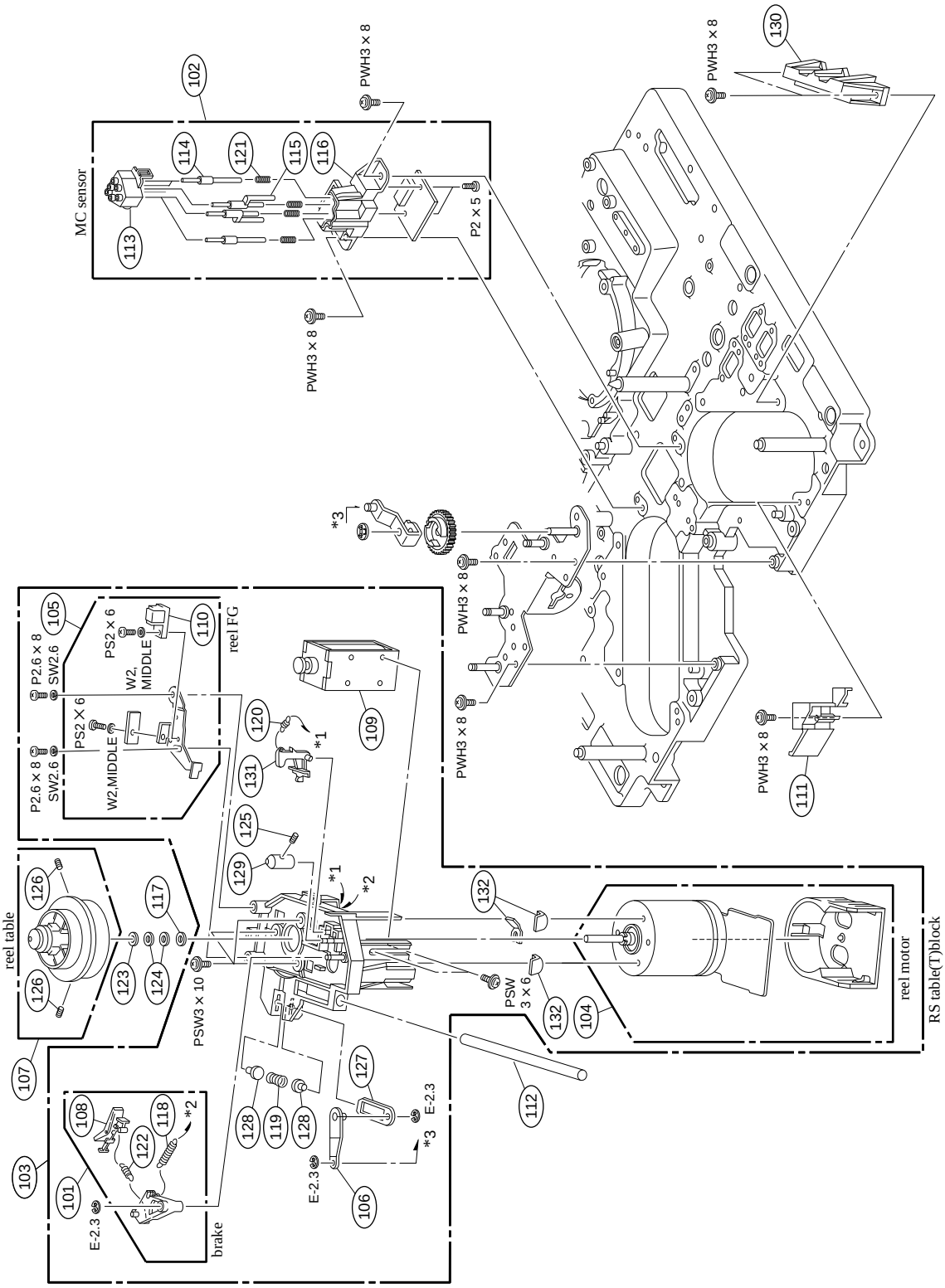
No.	Part No.	SP	Description
1	A-6741-066-A	o	BRAKE ASSY
2	A-8267-703-J	s	BLOCK ASSY, RS TABLE (S)
3	A-8267-774-E	s	RM ASSY
4	A-8276-619-A	o	MOUNTED CIRCUIT BOARD, PTC-71
5	A-8278-310-A	s	FG ASSY,REEL
6	A-8312-663-A	o	SHIFT ASSY, REEL
7	X-3166-060-1	o	ARM (B) ASSY, CRANK
8	X-3678-560-1	s	TABLE ASSY,REEL
9	X-3679-093-1	o	SHIFT ARM ASSY,CRANK
10	X-3679-094-1	o	SHIFT BASE ASSY,REEL
11	X-3717-205-1	s	LINING ASSY
12	1-454-417-41	s	SOLENOID, PLUNGER
13	1-648-570-11	o	PRINTED CIRCUIT BOARD, CCM-15
14	1-698-152-11	s	MOTOR, DC (SVD-1449)
15	1-801-300-11	s	RESISTOR, ELEMENT, MAGNETIC
16	2-280-622-51	o	SUPPORT (M3), HEXAGON
17	3-171-316-01	s	GEAR, M
18	3-171-397-02	o	HOLDER (S), SHAFT
19	3-171-429-01	o	GEAR, LS
20	3-171-431-01	s	SHAFT, SLIDE
21	3-180-687-01	o	HOLDER (A), SHAFT
22	3-180-866-01	o	BASE, LS SENSOR
23	3-188-108-01	s	WASHER, POLY 4mm DIA., 0.05T
24	3-307-381-00	s	SPRING, TENSION
25	3-491-247-00	s	SPRING, COMPRESSION
26	3-535-532-01	s	SPRING, TENSION
27	3-603-393-01	o	GEAR,SHIFT
28	3-608-171-01	o	SHIFT GEAR,CRANK
29	3-648-217-00	o	SPRING, TENSION
30	3-659-324-00	s	SPRING, COMPRESSION
31	3-669-596-00	s	WASHER (2.3), STOPPER
32	3-701-441-01	s	WASHER, POLY 4mm DIA., 0.13T
33	3-701-441-11	s	WASHER, POLY 4mm DIA., 0.25T
34	3-701-441-21	s	WASHER, POLY 4mm DIA., 0.50T
35	3-701-506-01	s	SET SCREW, DOUBLE POINT 3X4
36	3-701-507-00	s	SET SCREW, DOUBLE POINT,(M3X5)
37	3-717-224-01	s	RETAINER, SHAFT, SLIDE
38	3-717-230-01	o	BRACKET, LIMITER
39	3-717-231-01	o	HOLDER, LIMITER
40	3-717-266-01	o	CAP (S), CG SHAFT
41	3-717-398-01	o	TABLE, SLIDE
42	3-717-399-01	s	WHEEL, W
43	3-717-450-02	o	ARM, BRAKE RELEASE
44	3-717-625-01	s	SPACER
45	8-719-939-05	s	PHOTO INTERRUPTER GP1S54


PWH3 × 8
41
PWH3 × 8
21
16
37
PWH3 × 8
6
31
9
28
13
31
42
14
PWH3 × 8
30
27
PWH
3 × 8
19
31
PWH
3 × 8
B3 × 4
10
17
31
9
28
P2.6 × 8
SW2.6
5
PS2 × 6
W2,MIDDLE
15
PS2 × 6
W2,
MIDDLE
P2.6 × 8
SW2.6
45
22
PWH
3 × 8
4
SET SCREW,HEXAGON
2 × 4 (FLAT POINT)
reel shift
reel FG
39
25
39
PSW3 × 10
36
32
33
34
reel table
36
23
43
*1
26
8
44
3
PWH3 × 8
18
PSW3 × 6
7
38
E-2.3
E-2.3
12
RS table(S)block
40
35
*1
24
11
29
2
1
brake
E-2.3
20



No.	Part No.	SP	Description
101	A-6741-066-A	o	BRAKE ASSY
102	A-8267-549-B	o	SENSOR ASSY, MC
103	A-8267-702-H	s	BLOCK ASSY RS TABLE (T)
104	A-8267-774-E	s	RM ASSY
105	A-8278-310-A	s	FG ASSY,REEL
106	X-3166-060-1	o	ARM (B) ASSY, CRANK
107	X-3678-560-1	s	TABLE ASSY,REEL
108	X-3717-205-1	s	LINING ASSY
109	1-454-417-41	s	SOLENOID, PLUNGER
110	1-801-300-11	s	RESISTOR, ELEMENT, MAGNETIC
111	3-171-428-02	o	HOLDER (T), SHAFT
112	3-171-431-01	s	SHAFT, SLIDE
113	3-180-756-01	o	CAP, MC
114	3-180-757-01	o	PIN (1), MC
115	3-180-758-01	o	PIN (2), MC
116	3-180-759-01	o	HOLTER, MC
117	3-188-108-01	s	WASHER, POLY 4mm DIA., 0.05T
118	3-307-381-00	s	SPRING, TENSION
119	3-491-247-00	s	SPRING, COMPRESSION
120	3-535-532-01	o	SPRING, TENSION

No.	Part No.	SP	Description
121	3-554-202-00	o	SPRING, COMPRESSION
122	3-648-217-00	o	SPRING, TENSION
123	3-701-441-01	s	WASHER, POLY 4mm DIA., 0.13T
124	3-701-441-21	s	WASHER, POLY 4mm DIA., 0.50T
125	3-701-506-01	s	SET SCREW, DOUBLE POINT 3X4
126	3-701-507-00	s	SET SCREW, DOUBLE POINT,(M3X5)
127	3-717-230-01	o	BRACKET, LIMITER
128	3-717-231-01	o	HOLDER, LIMITER
129	3-717-266-01	o	CAP (S), CG SHAFT
130	3-717-398-01	o	TABLE, SLIDE
131	3-717-450-02	o	ARM, BRAKE RELEASE
132	3-717-625-01	s	SPACER


MC sensor
PWH3 × 8
P2 × 5
PWH3 × 8
PWH3 × 8
PWH3 × 8
PWH3 × 8
PS2 × 6
W2, MIDDLE
P2.6 × 8
SW2.6
PS2 × 6
W2,MIDDLE
P2.6 × 8
SW2.6
reel FG
reel table
PSW3 × 10
PSW
3 × 6
reel motor
RS table(T)block
brake
E-2.3
E-2.3
E-2.3
*1
*2
*3
102
113
114
121
115
116
130
111
105
110
109
120
131
125
129
126
117
123
124
126
132
104
107
112
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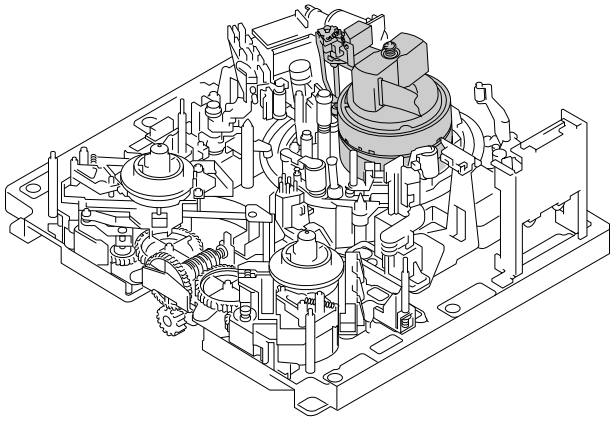
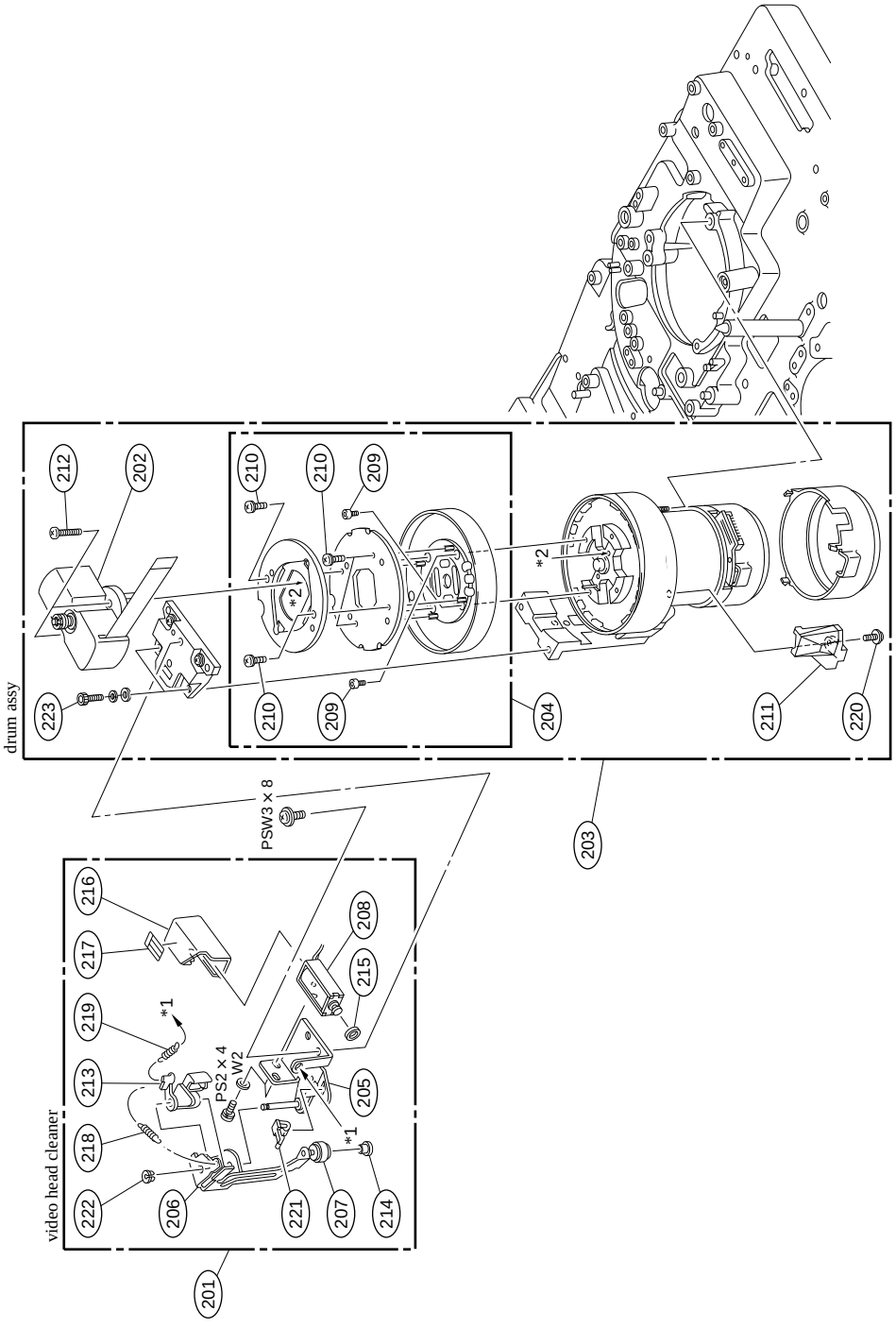
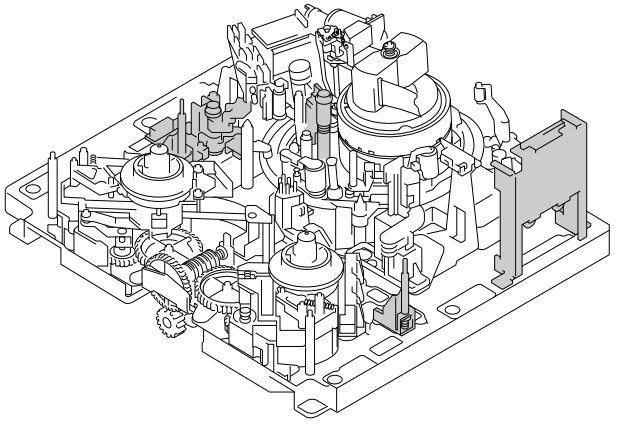
118
122
103
101
128
119
128
127
106



No.	Part No.	SP	Description
201	A-8267-398-J	s	CLEANER ASSY, VIDEO HEAD
202	A-8312-151-B	s	BRUSH (SR4) ASSY (RP)
203	A-8312-566-A	s	DRUM ASSY, DDH-55A-R
204	A-8312-567-A	s	UPPER DRUM ASSY, DDR-55-R
205	X-3167-045-3	o	BASE ASSY, V CLEANER
206	X-3167-280-3	s	CLEANER SUB ASSY, VIDEO HEAD
207	X-3167-281-3	s	ROLLER ASSY, V CLEANING
208	1-454-607-11	s	SOLENOID, PLUNGER
209	2-623-773-21	o	BOLT (M3X10), STAINLESS
210	2-640-315-01	o	SCREW (M2X5), SMALL, +P, SW
211	3-180-112-02	o	BRACKET, TAPE
212	3-180-163-01	s	SCREW (2X16)
213	3-180-729-02	o	LEVER, V CLEANER
214	3-182-765-02	s	SPACER, CR
215	3-183-901-01	s	WASHER, CL
216	3-183-903-01	o	CASE, VH SHIELD
217	3-190-056-01	s	LABEL, HOURS
218	3-307-378-00	s	SPRING, TENSION
219	3-642-490-00	s	SPRING, TENSION
220	3-669-607-11	s	+PSW (SMALL ROUND) (2.6)
221	3-671-150-01	o	CLAMP
222	3-703-074-01	s	CAP 3, SHAFT
223	3-899-249-11	s	BOLT, HEXAGON SOCKET


drum assy
video head cleaner
PSW3 × 8
PS2 × 4
W2
*1
*2
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223



No.	Part No.	SP	Description
301	A-8265-530-D	s	HEAD ASSY, FE
302	A-8267-392-A	o	SENSOR ASSY, MR
303	A-8277-408-B	s	REGULATOR ASSY, TENSION (RP)
304	A-8278-483-A	s	TG-2 ASSY
305	A-8312-319-A	o	MOUNTED CIRCUIT BOARD, SE-358
306	2-203-519-21	s	NUT (A), LOCK, PIVOT
307	3-180-669-02	s	FLANGE, FIXED GUIDE USE
308	3-180-745-01	o	LEVER, MR
309	3-180-746-01	o	HOLDER, MR
310	3-181-489-01	s	FLANGE, DIA. 8
311	3-181-490-01	o	SLEEVE, DIA. 7
312	3-608-610-01	o	AIR STABILIZER
313	3-738-730-01	s	SPRING, COMPRESSION
314	4-880-426-00	o	SPRING, COMPRESSION
315	8-825-770-74	s	HEAD, FE EF291-21
316	3-194-602-01	s	FOOT (S), L CASSETTE HOLDER
317	X-3168-025-1	s	PLATE (S) ASSY
318	3-194-601-01	s	L CASSETTE HOLDER (S)

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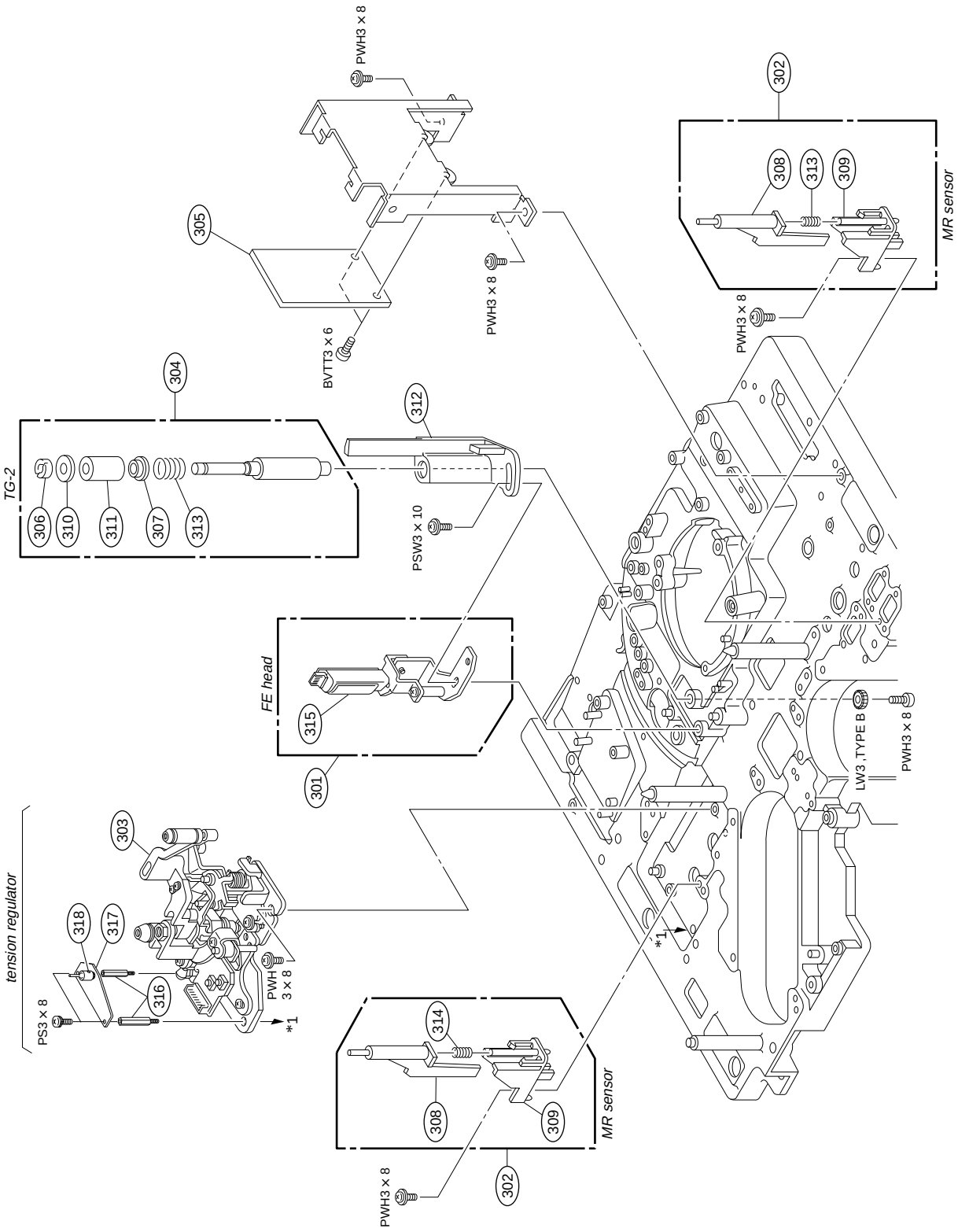
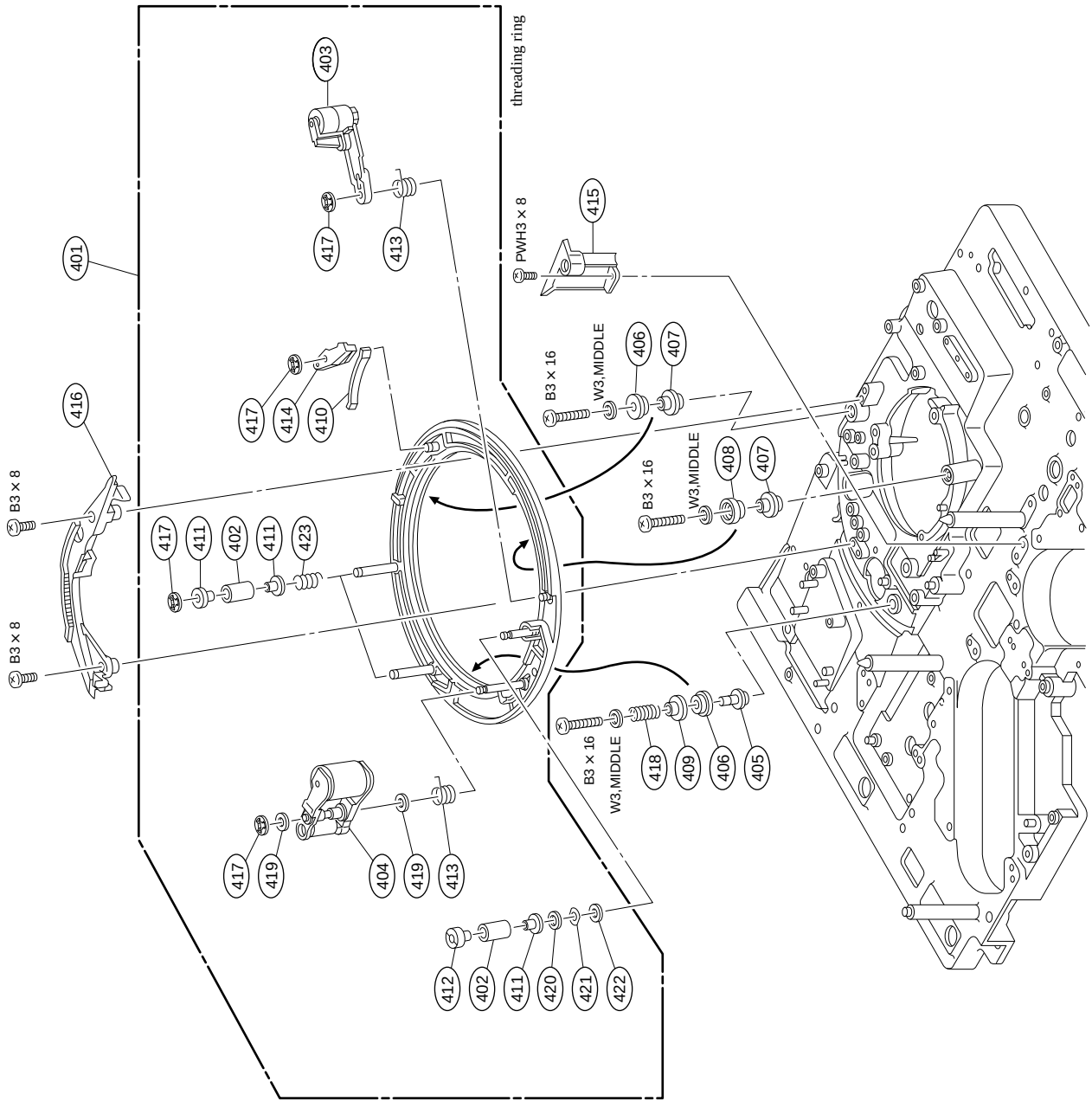
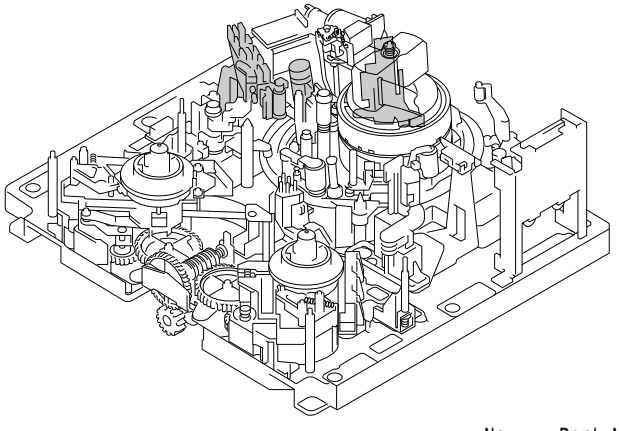
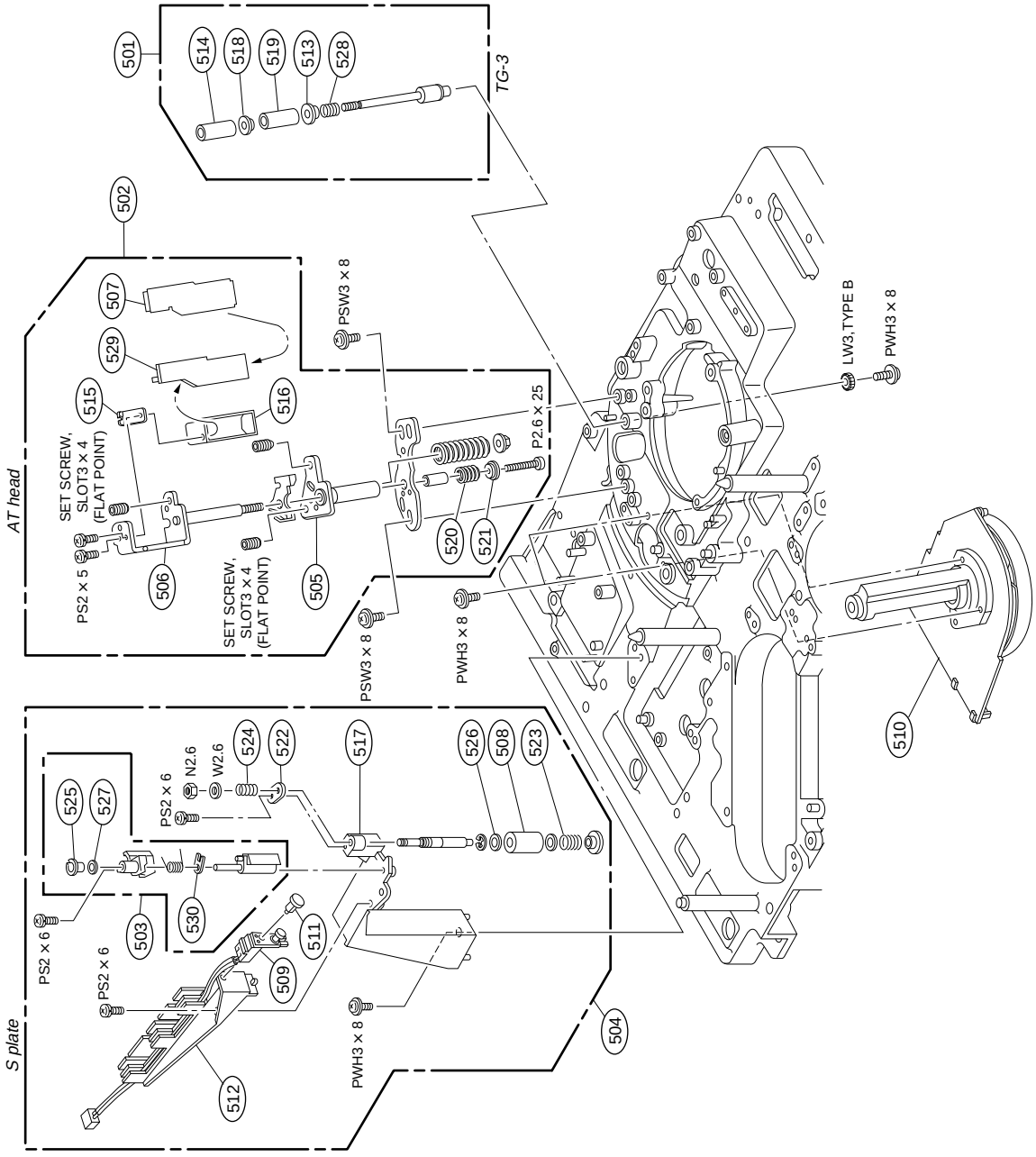


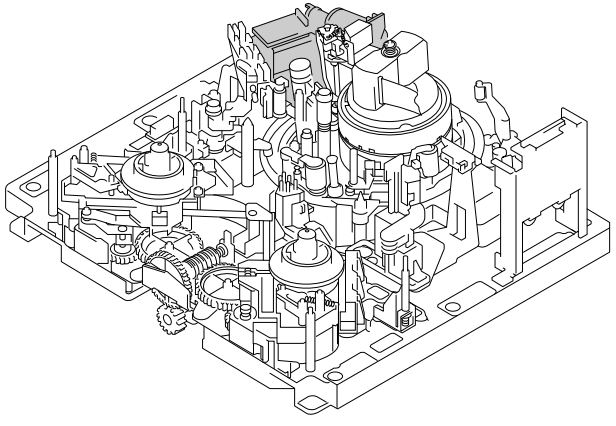
No.	Part No.	SP	Description
401	A-8320-884-A	S	RING ASSY, THREADING
402	X-3167-052-2	S	ROLLER ASSY, ONEBARE
403	X-3167-053-2	S	ARM ASSY, CL
404	X-3604-682-1	S	ASSY, GROOVED PINCH ARM
405	3-180-676-01	S	SHAFT, (B) RING ROLLER
406	3-180-677-01	S	ROLLER, RING
407	3-180-678-01	S	SHAFT, RING ROLLER
408	3-180-679-01	S	ROLLER, (B) RING
409	3-180-681-01	S	ROLLER (C) RING
410	3-180-772-01	S	SPRING (R6), PLATE
411	3-180-773-02	S	FLANGE, ONEBARE USE
412	3-180-774-03	S	FLANGE, TG5 (UPPER)
413	3-180-849-01	S	SPRING (C), TORSION
414	3-180-850-01	S	ARM, LOCK
415	3-180-853-01	S	GUARD, PINCH ARM
416	3-180-874-02	S	RAIL, CL GUIDE
417	3-669-596-00	S	WASHER (2.3), STOPPER
418	3-676-327-01	S	SPRING, COMPRESSION
419	3-701-439-01	S	WASHER, POLY 3mm DIA., 0.13T
	3-701-439-11	S	WASHER, POLY 3mm DIA., 0.25T
420	3-701-439-21	S	WASHER, POLY 3mm DIA., 0.50T
421	3-714-587-01	O	SPRING, LEAF
422	3-739-736-02	O	BASE, SPRING
423	4-879-563-00	S	SPRING, COMPRESSION


threading ring
403
417
413
401
PWH3 × 8
415
B3 × 16
W3,MIDDLE
406
407
417
414
410
416
B3 × 8
B3 × 16
W3,MIDDLE
408
407
B3 × 8
417
411
402
411
423
B3 × 16
W3,MIDDLE
418
409
406
405
417
419
404
419
413
412
402
411
420
421
422

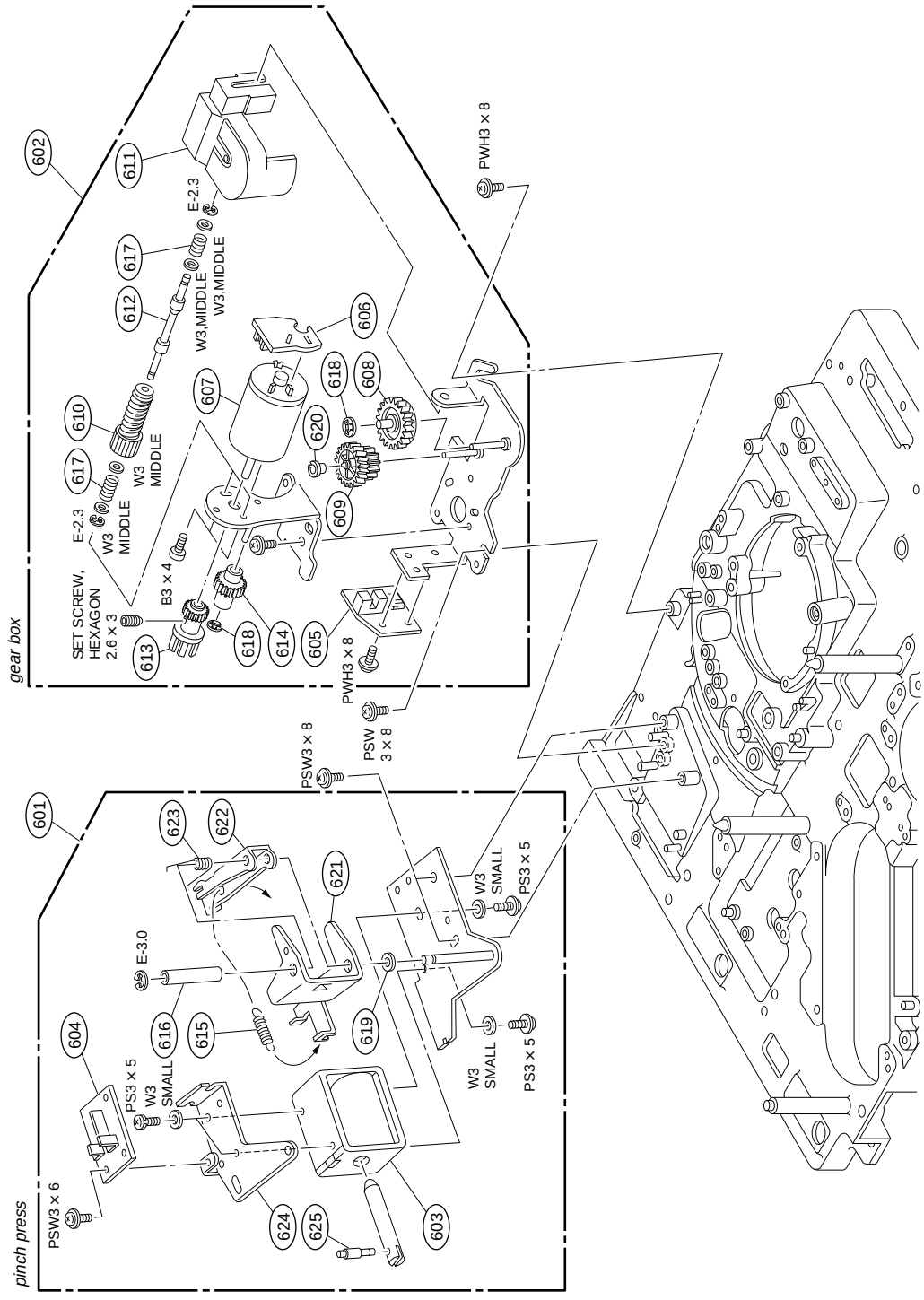


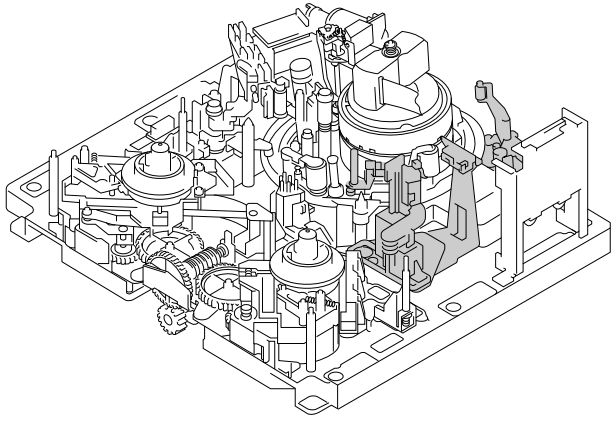
No.	Part No.	SP	Description
501	A-8267-394-C	s	TG-3 ASSY
502	A-8318-771-A	o	HEAD ASSY, AT
503	A-8278-345-A	o	TURN BLADE ASSY
504	A-8278-486-A	o	PLATE ASSY,S
505	X-3167-057-1	o	PLATE, ADJUSTMENT ASSY, AT
506	X-3167-061-2	o	BRACKET ASSY, AT
507	X-3167-142-2	o	PLATE, SHIELD ASSY, AT
508	X-3167-347-1	s	ROLLER ASSY, GUIDE
509	1-543-316-31	s	HEAD, SENSING (SMALL TYPE)
510	1-698-179-12	s	MOTOR, DC (CAPSTAN)
511	2-279-715-01	s	RIVET, NYLON
512	3-180-403-01	o	HOLDER, SENSOR
513	3-180-669-02	s	FLANGE, FIXED GUIDE USE
514	3-180-670-01	o	NUT, FIXED GUIDE ADJUSTMENT
515	3-180-826-01	o	GOOSENECK PLATE
516	3-180-829-04	o	CASE, SHIELD AT
517	3-180-869-04	s	PLATE, (S)
518	3-181-489-01	s	FLANGE, DIA. 8
519	3-181-491-01	o	SLEEVE, DIA. 6
520	3-181-979-01	o	SPRING, COMPRESSION
521	3-181-980-01	o	SPACER, AT
522	3-183-823-01	o	BRACKET, GUIDE RETAINER
523	3-637-331-00	s	SPRING, COMPRESSION (L)
524	3-669-316-00	s	SPRING, COMPRESSION
525	3-701-437-11	s	WASHER, POLY 2mm DIA., 0.25T
526	3-701-439-31	s	WASHER, POLY 3mm DIA., 0.40T
527	3-703-075-00	s	CAP 2, SHAFT
528	3-738-730-01	s	SPRING, COMPRESSION
529	8-620-003-71	s	HEAD, AUDIO EPS244-2103G
530	3-611-650-01	s	STOPPER


501
514
518
519
513
528
TG-3
502
507
529
515
516
PSW3 × 8
P2.6 × 25
LW3.TYPE B
PWH3 × 8
AT head
SET SCREW, SLOT3 × 4 (FLAT POINT)
PS2 × 5
506
SET SCREW, SLOT3 × 4 (FLAT POINT)
505
520
521
PSW3 × 8
PWH3 × 8
510
525
527
PS2 × 6
N2.6
W2.6
524
522
517
526
508
523
503
530
511
509
PS2 × 6
PS2 × 6
PWH3 × 8
504
512
S plate



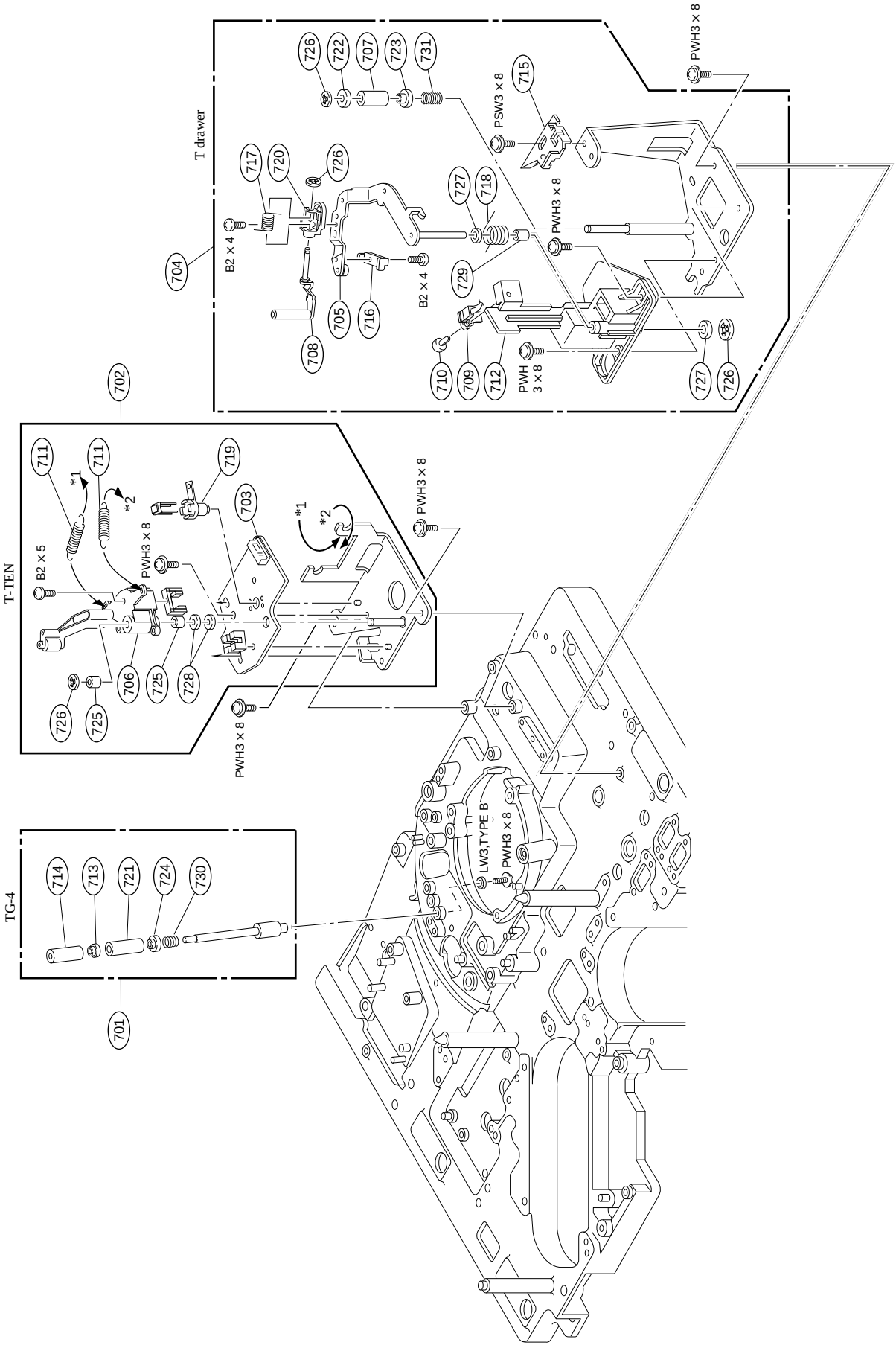
No.	Part No.	SP	Description
601	A-6749-117-C	o	PRESS ASSY, PINCH
602	A-8273-997-A	s	BOX ASSY, GEAR
603	1-454-338-00	s	SOLENOID, PLUNGER
604	1-622-596-11	o	PRINTED CIRCUIT BOARD, PD-35
605	1-640-163-12	o	PRINTED CIRCUIT BOARD, PTC-54
606	1-648-570-11	o	PRINTED CIRCUIT BOARD, CCM-15
607	1-698-152-11	s	MOTOR, DC (SVD-1449)
608	3-180-717-01	s	GEAR, RING
609	3-180-718-01	s	GEAR, DRIVE
610	3-180-719-01	s	GEAR, WORM
611	3-180-720-01	o	GUARD, WORM
612	3-180-843-02	o	SHAFT, WORM
613	3-180-844-01	s	GEAR, (M)
614	3-180-845-01	s	(B), GEAR
615	3-537-674-03	s	SPRING, TENSION
616	3-653-382-01	o	SPACER (4X25)
617	3-659-324-00	s	SPRING, COMPRESSION
618	3-669-596-00	s	WASHER (2.3), STOPPER
619	3-701-441-21	s	WASHER, POLY 4mm DIA., 0.50T
620	3-703-074-01	s	CAP 3, SHAFT
621	3-717-246-01	o	LEVER, PRESS, P
622	3-717-247-01	o	LIMITER, P
623	3-717-248-01	o	SPRING
624	3-717-249-01	o	STOPPER, P
625	3-717-250-02	o	SHAFT, JOINT, P


gear box
pinch press
602
611
E-2.3
617
612
W3,MIDDLE
W3,MIDDLE
606
607
618
608
620
610
617
W3
MIDDLE
E-2.3
W3
MIDDLE
609
B3 × 4
SET SCREW,
HEXAGON
2.6 × 3
613
618
614
605
PWH3 × 8
PWH3 × 8
PSW
3 × 8
PSW3 × 8
601
623
622
621
W3
SMALL
PS3 × 5
E-3.0
604
616
615
619
PS3 × 5
W3
SMALL
W3
SMALL
PS3 × 5
PSW3 × 6
624
625
603



No.	Part No.	SP	Description
701	A-8267-555-D	s	TG-4 ASSY
702	A-8273-996-A	s	T-TEN ASSY
703	A-8276-628-A	o	MOUNTED CIRCUIT BOARD, TR-79
704	A-8274-876-C	s	DRAWER ASSY(T)
705	X-3167-063-4	s	ARM ASSY, DRAWING, T
706	X-3167-064-5	s	ARM ASSY, T-TEN
707	X-3167-347-1	s	ROLLER ASSY, GUIDE
708	X-3678-288-1	s	GUIDE ASSY,SLANT
709	1-543-316-31	s	HEAD, SENSING (SMALL TYPE)
710	2-279-715-01	s	RIVET, NYLON
711	3-180-262-01	s	SPRING, EXTENSION
712	3-180-404-02	o	BASE, DRAWING, (T)
713	3-180-669-02	s	FLANGE, FIXED GUIDE USE
714	3-180-670-01	o	NUT, FIXED GUIDE ADJUSTMENT
715	3-180-708-01	s	PLATE, SLANT GUIDE ADJUSTMENT
716	3-180-710-03	s	GUARD, DRAWER
717	3-180-715-01	s	SPRING, (A) TORSION COIL
718	3-180-716-02	s	SPRING, (B) TORSION COIL
719	3-180-861-01	o	HOLDER, DME
720	3-180-863-03	s	BASE, SLANT GUIDE

No.	Part No.	SP	Description
721	3-181-490-01	o	SLEEVE, DIA. 7
722	3-183-460-02	s	FLANGE (B), UPPER
723	3-183-462-02	s	FLANGE, LOWER
724	3-190-819-01	s	FLANGE (1), DIA. 8
725	3-645-028-00	s	BEARING, BALL
726	3-669-596-00	s	WASHER (2.3), STOPPER
727	3-701-439-01	s	WASHER, POLY 3mm DIA., 0.13T
	3-701-439-11	s	WASHER, POLY 3mm DIA., 0.25T
	3-701-439-21	s	WASHER, POLY 3mm DIA., 0.50T
728	3-701-439-21	s	WASHER, POLY 3mm DIA., 0.50T
729	3-717-253-01	s	ROLLER
730	3-738-730-01	s	SPRING, COMPRESSION
731	4-879-563-00	s	SPRING, COMPRESSION


T drawer
T-TEN
TG-4
B2 × 4
B2 × 5
PWH3 × 8
PSW3 × 8
PWH 3 × 8
LW3,TYPE B
*1
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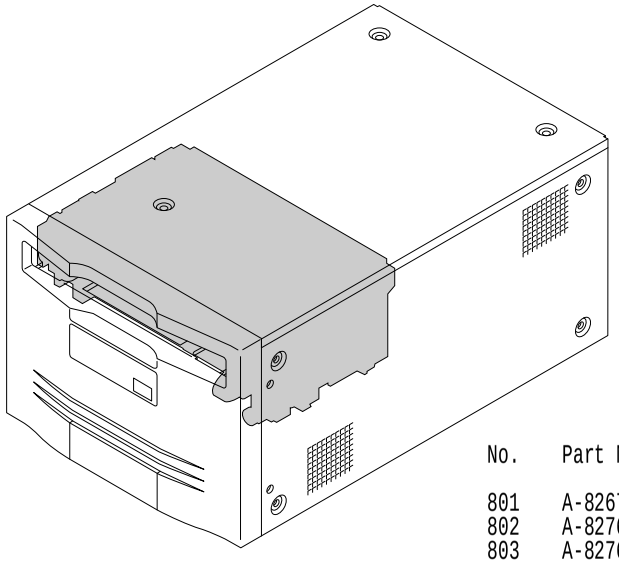

No.	Part No.	SP	Description
801	A-8267-863-E	s	CASSETTE COMPARTMENT ASSY
802	A-8276-625-A	o	MOUNTED CIRCUIT BOARD, PC-70
803	A-8276-626-B	o	MOUNTED CIRCUIT BOARD, CL-29
804	A-8276-957-B	s	STAGE ASSY
805	X-3167-446-3	o	SLIDER (L) ASSY
806	X-3167-447-3	o	SLIDER (R) ASSY
807	X-3167-848-1	o	DECK (R) ASSY, PULLEY
808	X-3167-849-1	o	DECK (L) ASSY, PULLEY
809	1-698-152-11	s	MOTOR, DC (SVD-1449)
810	1-665-836-11	s	PC BOARD, CL-41 FLEXIBLE
811	3-171-367-06	o	SWITCH (R), IN
812	3-171-398-05	o	SWITCH (L), IN
813	3-171-399-02	o	GUIDE (R), CASSETTE
814	3-171-400-04	s	GUIDE (L), CASSETTE
815	3-171-418-03	s	WORM
816	3-171-419-11	s	WHEEL
817	3-171-420-03	o	SHUTTER
818	3-171-421-01	o	SLIDER, DOOR SWITCHING
819	3-171-422-01	o	LEVER, DOOR SWITCHING
820	3-171-423-02	o	JOINT, MOTOR
821	3-171-424-02	o	HOLDER, SENSOR
822	3-171-457-03	o	SHAFT, JOINT
823	3-171-458-01	s	BELT, TIMING
824	3-171-459-02	s	ROLLER, GUIDE
825	3-171-460-01	s	ROLLER, SLIDER
826	3-171-461-04	o	SHAFT, RETAINER, L CASSETTE
830	3-171-465-01	o	GEAR, DRIVING
831	3-171-466-02	o	GEAR, LIMITER
832	3-171-479-01	o	GEAR, MIDWAY
833	3-171-480-01	o	SHAFT, WORM WHEEL

No.	Part No.	SP	Description
834	3-171-510-02	s	DOOR, CASSETTE
835	3-176-139-01	s	SPRING, C GUIDE
836	3-176-583-01	o	PULLEY (A)
837	3-176-584-01	o	PULLEY (B)
838	3-176-598-02	o	SPRING, GROUND
839	3-181-430-01	o	WHEEL, WORM
840	3-181-431-01	o	RUBBER, LIMITER
841	3-182-706-01	s	SPACER
842	3-188-273-01	s	ROLLER (B), GUIDE
843	3-188-745-01	s	BALL BEARING, NON-FLANGED
844	3-190-575-01	s	SPRING, TENSION
845	3-548-757-00	s	SPRING, TENSION
846	3-579-759-00	s	SPRING, COMPRESSION
847	3-646-214-00	s	SPRING
848	3-672-461-00	s	SPRING, TENSION
849	3-677-193-00	o	PIN, STOPPER
850	3-698-217-11	s	BEARING (NO FLANGE), BALL
851	3-701-439-21	s	WASHER, POLY 3mm DIA., 0.50T
852	3-712-786-01	s	DAMPER, OIL
853	3-717-369-04	o	STOPPER, DOOR
854	4-858-799-00	s	SPRING, TENSION
855	X-3168-049-1	s	LEAF SPRING (R) ASSY
856	X-3168-050-1	s	LEAF SPRING (L) ASSY
857	3-531-576-11	s	RIVET

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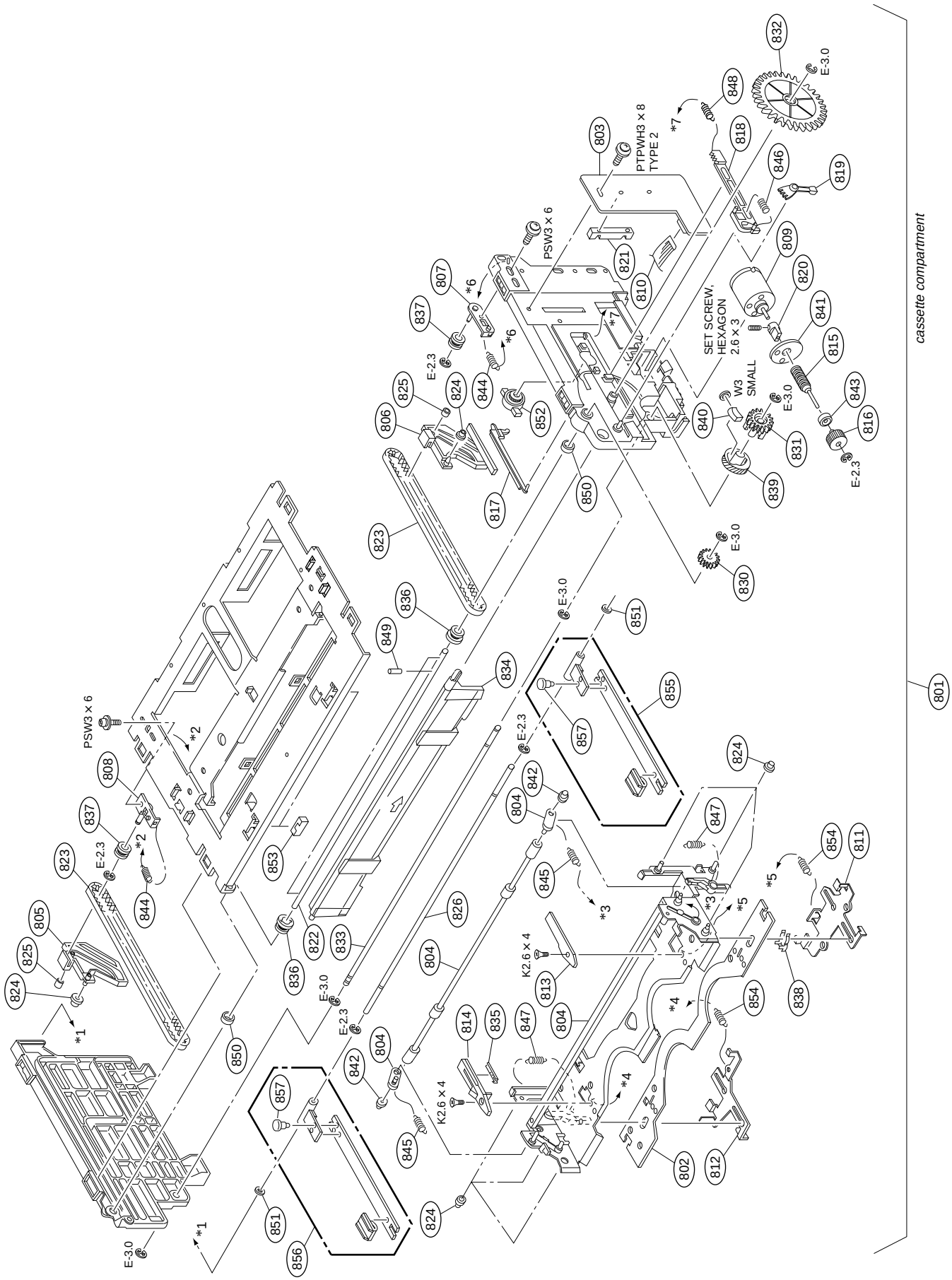
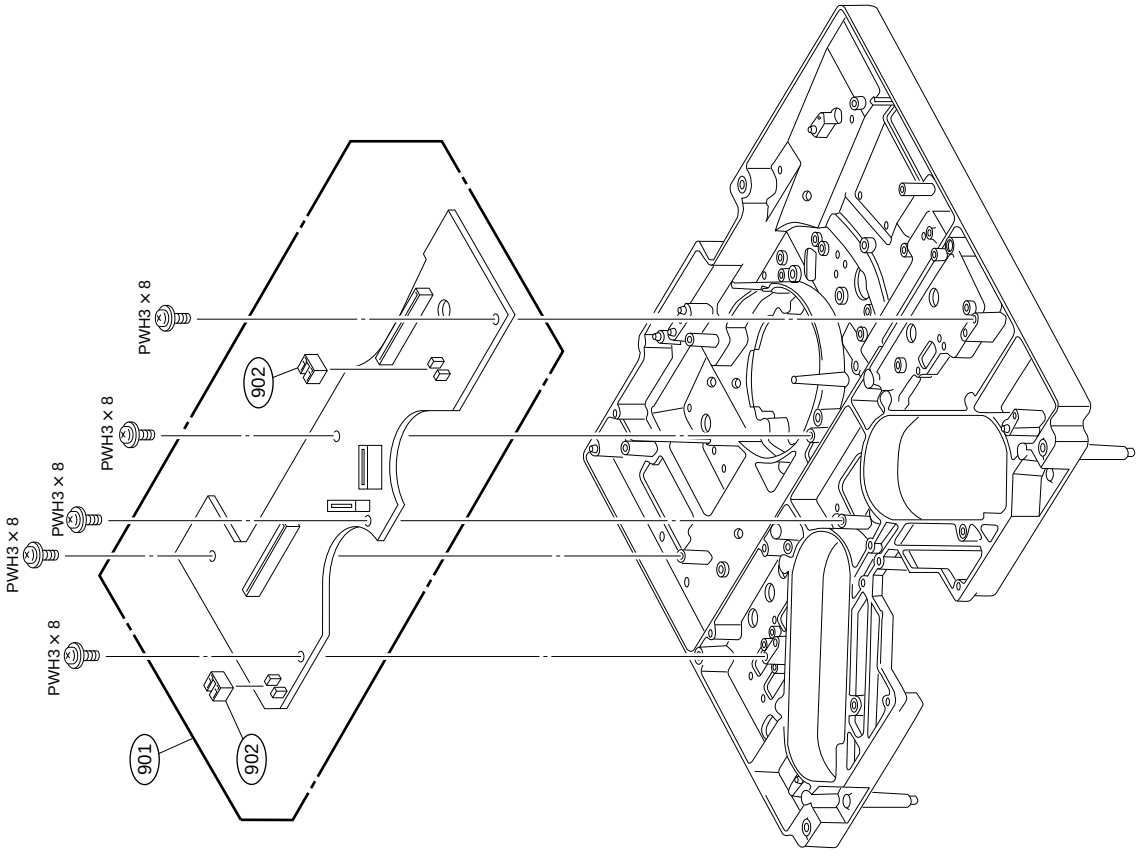
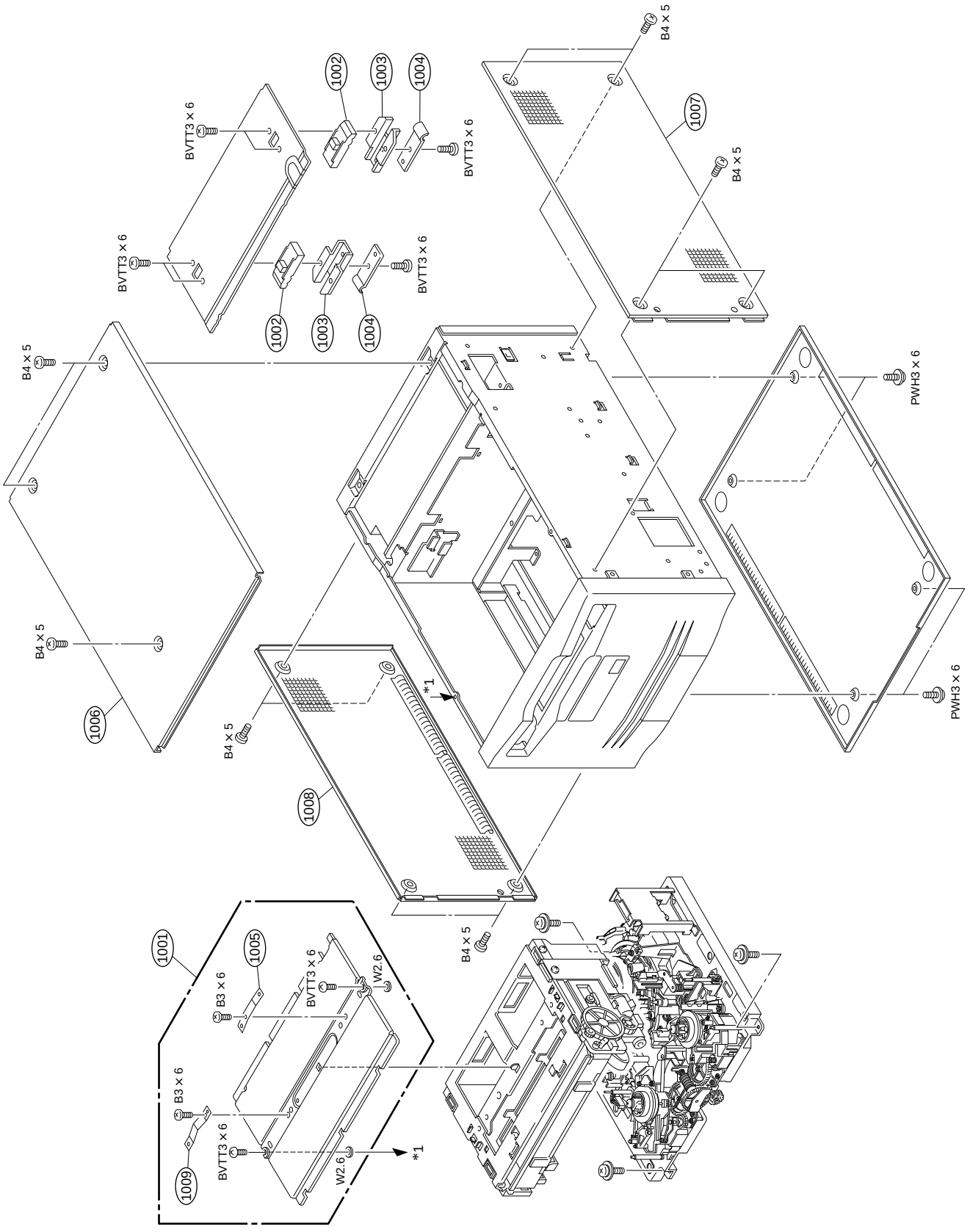


No.	Part No.	SP	Description
901	A-8312-629-A	O	MOUNTED CIRCUIT BOARD, MS-54
902	3-180-854-03	O	COVER, MR SENSOR


PWH3 × 8
PWH3 × 8
PWH3 × 8
PWH3 × 8
PWH3 × 8
902
901
902

No.	Part No.	SP	Description
1001	A-8267-384-D	s	BRACKET ASSY
1002	3-180-751-01	o	MD, SLIDER
1003	3-180-752-01	o	BRACKET, SLIDER
1004	3-180-753-03	o	MD, PLATE SPRING
1005	3-182-786-01	o	SPRING, CASSETTE COMPARTMENT
1006	3-606-169-04	o	PLATE,TOP
1007	3-606-190-02	o	PANEL(R),ORNAMENTAL
1008	3-606-375-01	o	PANEL(L),ORNAMENTAL
1009	3-717-306-01	o	SPRING


1001
1002
1003
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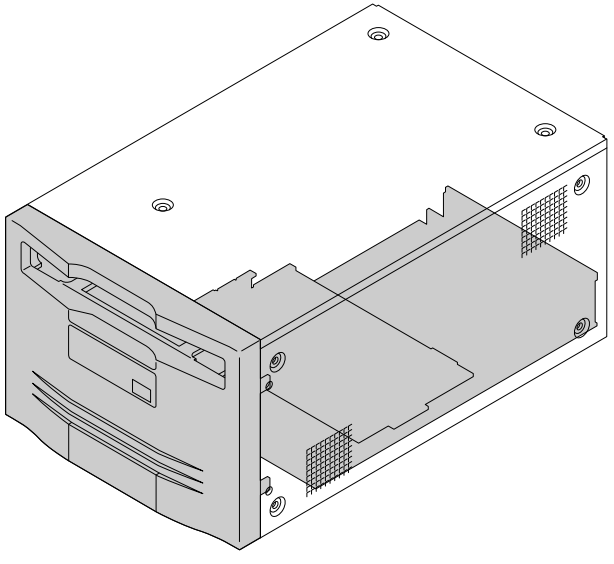
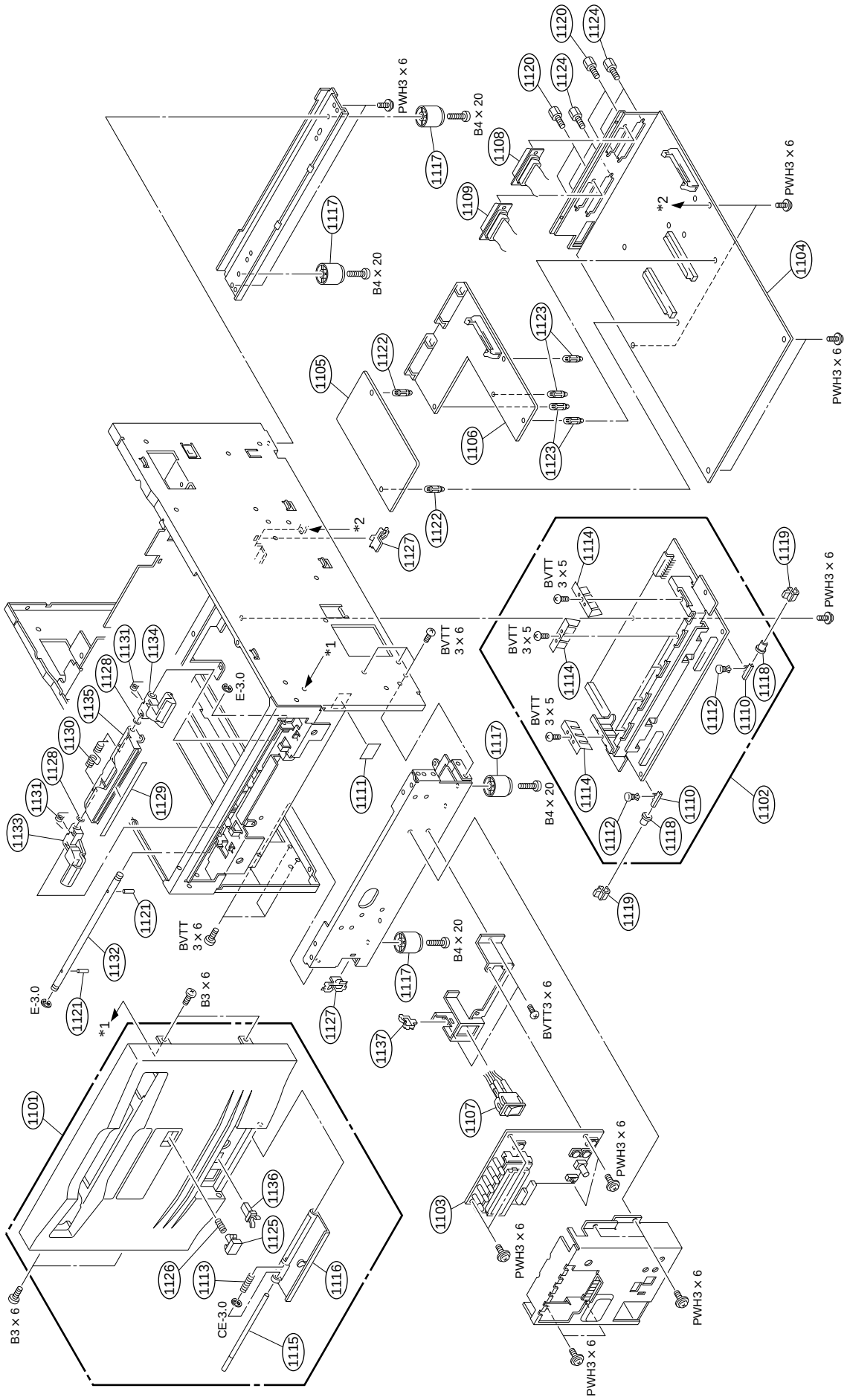
1009
B4 × 5
B3 × 6
BVTT3 × 6
W2.6
PWH3 × 6
*1



No.	Part No.	SP	Description
1101	A-8278-519-B	o	PANEL ASSY,FRONT
1102	A-8312-326-A	o	MOUNTED CIRCUIT BOARD, DR-327
1103	A-8312-625-A	o	MOUNTED CIRCUIT BOARD, DSP-78
1104	A-8312-631-A	o	MOUNTED CIRCUIT BOARD, MA-83
1105	A-8312-667-A	o	MOUNTED CIRCUIT BOARD, MEM-83
1106	A-8312-809-A	o	MOUNTED CIRCUIT BOARD, IF-682 (for GY-2120WD)
	A-8312-811-A	o	MOUNTED CIRCUIT BOARD, IF-683 (for GY-2120WS)
1107	⚠1-762-300-11	s	SWITCH, ROCKER
1108	1-957-063-12	o	HARNESS, SUB (MA 232C)
1109	1-957-064-12	o	HARNESS, SUB (MA 9PIN)
1110	3-180-760-01	o	SUPPORT, DR
1111	3-185-303-01	o	SEAL, EJECT
1112	3-531-576-11	s	RIVET
1113	3-544-222-01	s	SPRING, COMPRESSION
1114	3-606-173-01	o	BRACKET,TRANSISTOR
1115	3-606-196-02	o	SHAFT,DOOR
1116	3-606-410-01	o	DOOR
1117	3-642-656-01	s	FOOT
1118	3-646-084-00	o	CAP, REINFORCEMENT
1119	3-646-086-00	o	HOLDER, ROD
1120	3-673-910-31	s	SCREW, CONNECTOR

No.	Part No.	SP	Description
1121	3-677-193-00	o	PIN, STOPPER
1122	3-682-419-01	o	HOLDER, P.C.B
1123	3-682-419-71	o	HOLDER, PCB
1124	3-682-469-01	o	SCREW FOR CONNECTOR
1125	3-687-044-11	o	BUTTON,UL
1126	3-687-045-01	s	SPRING,COMPRESSION
1127	3-698-787-01	o	HOLDER, WIRE
1128	3-701-441-21	s	WASHER, POLY 4mm DIA., 0.50T
1129	3-717-614-01	o	LABEL, C-LOCK OUT
1130	3-717-615-01	o	SPRING
1131	3-717-616-01	o	SPRING
1132	3-717-617-01	o	SHAFT, SC GUIDE
1133	3-717-618-01	o	GUIDE (LEFT), SC
1134	3-717-619-02	o	GUIDE (RIGHT), SC
1135	3-717-620-01	o	PLATE, OUT, C-LOCK
1136	4-047-464-01	s	CATCHER, PUSH
1137	4-310-385-00	o	HOLDER, WIRE


1101
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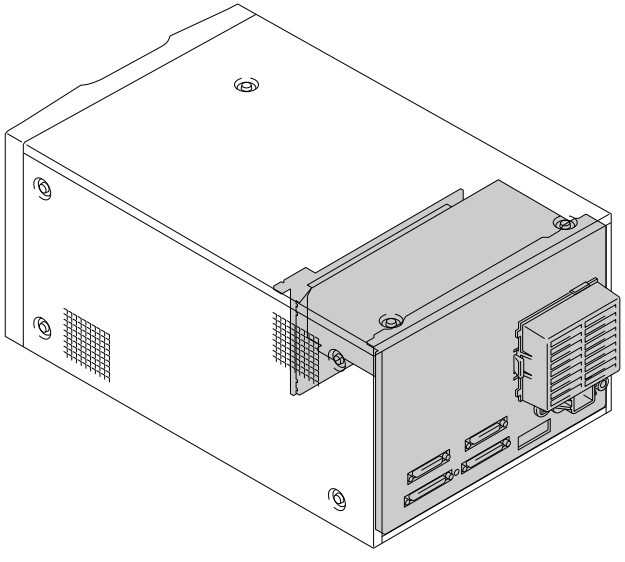
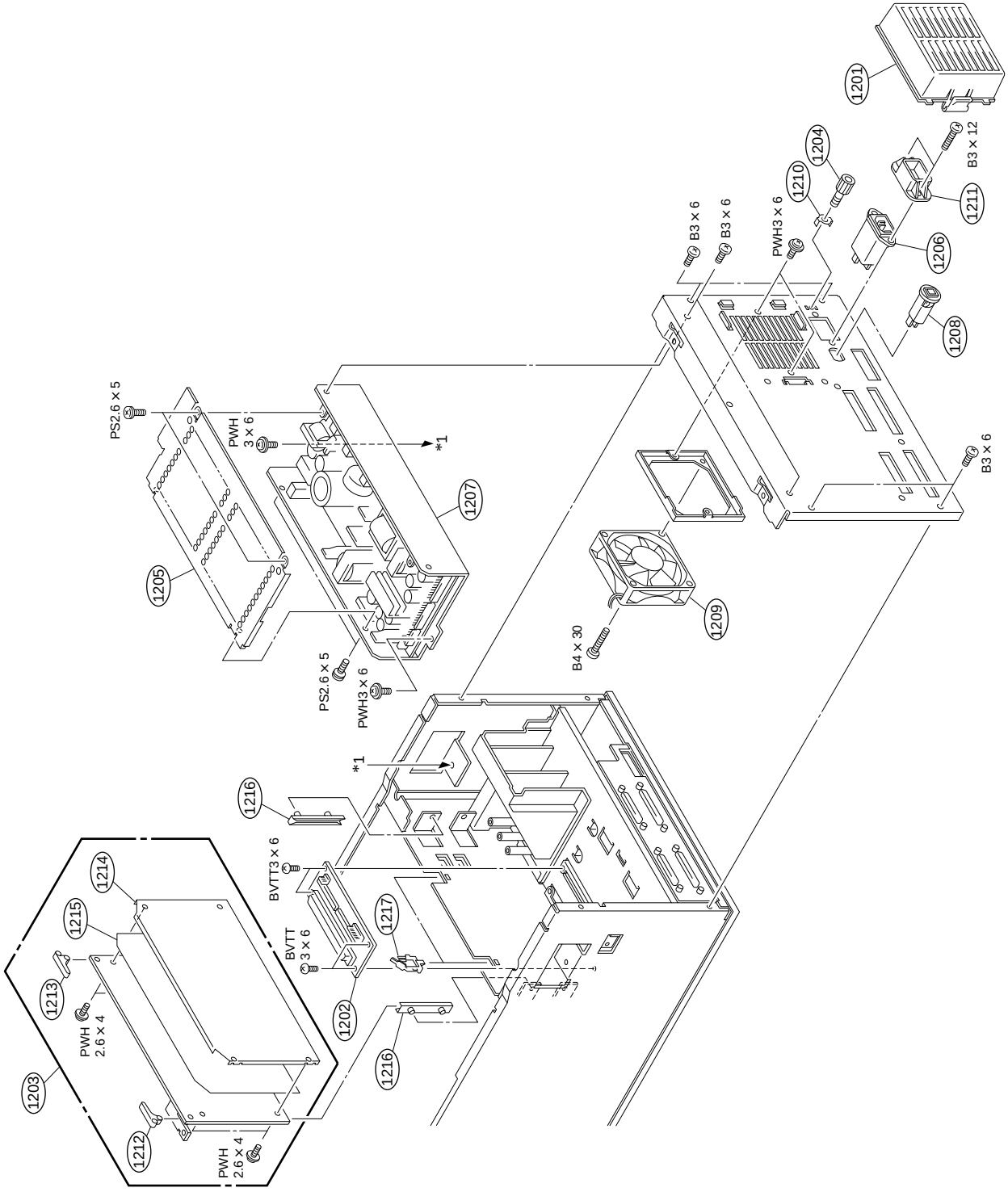
B4 × 20
BVTT 3 × 5
BVTT 3 × 6
BVTT3 × 6
B3 × 6
E-3.0
CE-3.0



No.	Part No.	SP	Description
1201	A-8007-311-A	s	FILTER ASSY
1202	A-8312-322-A	o	MOUNTED CIRCUIT BOARD, EX-603
1203	A-8312-324-A	o	MOUNTED CIRCUIT BOARD, EQ-66
1204	X-2068-004-0	s	TERMINAL ASSY
1205	X-3678-971-2	o	COVER ASSY,POWER
1206	⚠1-251-378-11	s	INLET (WITH NOISE FILTER)
1207	⚠1-468-201-11	s	REGULATOR, SWITCHING
1208	⚠1-533-630-11	s	BREAKER, CIRCUIT
1209	1-698-779-11	s	FAN, DC
1210	2-068-008-00	s	WASHER
1211	2-990-241-02	s	HOLDER (A), PLUG
1212	3-179-084-01	s	LEVER (R), PC BOARD
1213	3-179-085-01	s	LEVER (L), PC BOARD
1214	3-606-175-01	o	PLATE,SHIELD
1215	3-606-177-01	o	INSOLATION,EQ
1216	3-673-676-01	s	RAIL, GUIDE, CHASSIS
1217	4-316-015-00	o	HOLDER, WIRE


1201
1204
B3 × 12
1210
1211
PWH3 × 6
B3 × 6
B3 × 6
1206
1208
B3 × 6
PS2.6 × 5
PWH 3 × 6
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1207
1205
1209
B4 × 30
PS2.6 × 5
PWH3 × 6
*1
1216
BVTT3 × 6
1214
1215
1217
BVTT 3 × 6
1213
PWH 2.6 × 4
1202
1216
1203
1212
PWH 2.6 × 4

Part No.	SP	Description
7-621-260-55	s	SCREW +P 2.6X25
7-621-559-20	s	SCREW +K 2.6X4
7-621-733-08	s	SET-SCT, HEX 2X4 FLAT POINT
7-621-734-09	s	SET-SCT, HEX 2.6X3
7-621-772-00	s	SCREW +B 2X3
7-621-772-10	s	SCREW +B 2X4
7-621-772-20	s	SCREW +B 2X5
7-621-772-30	s	SCREW +B 2X6
7-621-772-50	s	SCREW +B 2X10
7-621-775-80	s	SCREW +B 2.6X16
7-622-207-05	s	N2.6, TYPE 2
7-623-205-22	s	SW 2, TYPE 2
7-623-207-22	s	SW 2.6, TYPE 2
7-623-422-07	s	LW 3, TYPE B
7-623-923-11	s	WASHER 2.6, NYLON
7-624-105-04	s	STOP RING 2.3, TYPE-E
7-624-106-04	s	STOP RING 3.0, TYPE-E
7-624-133-04	s	STOP RING 3.0, TYPE-CE
7-628-253-00	s	SCREW +PS 2X4
7-628-253-15	s	SCREW +PS 2X5
7-628-253-20	s	SCREW +PS 2X6
7-682-545-09	s	SCREW +B 3X4
7-682-547-04	s	SCREW +B 3X6, SILVER
7-682-547-09	s	SCREW +B 3X6, BLACK
7-682-548-04	s	SCREW +B 3X8
7-682-550-09	s	SCREW +B 3X12
7-682-552-09	s	SCREW +B 3X16
7-682-559-04	s	SCREW +B 4X5
7-682-566-09	s	SCREW +B 4X20
7-682-568-09	s	SCREW +B 4X30
7-682-646-01	s	SCREW +PS 3X5
7-682-902-01	s	SCREW +PWH 2.6X4
7-682-903-11	s	SCREW +PWH 3X6
7-682-903-21	s	SCREW +PWH 3X8
7-682-947-01	s	SCREW +PSW 3X6
7-682-948-01	s	SCREW +PSW 3X8, GOLD
7-682-948-09	s	SCREW +PSW 3X8, BLACK
7-682-949-01	s	SCREW +PSW 3X10
7-682-962-01	s	SCREW +PSW 4X10
7-683-174-01	s	SET-SCREW, SLOT 3X4 FLAT POINT
7-683-176-01	s	SET-SCREW, SLOT 3X6 FLAT POINT
7-683-176-21	s	SET-SCREW, SLOT 3X6 CONE POINT
7-684-023-04	s	N3, TYPE 2
7-685-103-19	s	SCREW +P 2X5 TYPE 2 NON-SLIT
7-685-132-19	s	SCREW +B 2.6X5 TYPE 2 NON-SLIT
7-685-134-19	s	SCREW +P 2.6X8 TYPE 2 NON-SLIT
7-685-870-01	s	SCREW +BVTT 3X5 (S)
7-685-871-01	s	SCREW +BVTT 3X6 (S)
7-685-903-11	s	SCREW +PTPWH 3X6 TYPE 2
7-685-903-21	s	SCREW +PTPWH 3X8 TYPE 2
7-688-001-01	s	W2, SMALL
7-688-002-03	s	W2.6, MIDDLE
7-688-003-01	s	W3, SMALL
7-688-003-11	s	W3, MIDDLE
7-688-004-11	o	W4, MIDDLE

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7-3. Electrical Parts List

Part No.	SP	Description
A-8276-626-B	o	MOUNTED CIRCUIT BOARD, CL-29
A-8312-326-A	o	MOUNTED CIRCUIT BOARD, DR-327
A-8312-625-A	o	MOUNTED CIRCUIT BOARD, DSP-78
A-8312-324-A	o	MOUNTED CIRCUIT BOARD, EQ-66
A-8312-322-A	o	MOUNTED CIRCUIT BOARD, EX-603
A-8312-809-A	o	MOUNTED CIRCUIT BOARD, IF-682 (for GY-2120WD)
A-8312-811-A	o	MOUNTED CIRCUIT BOARD, IF-683 (for GY-2120WS)
A-8312-631-A	o	MOUNTED CIRCUIT BOARD, MA-83
A-8312-667-A	o	MOUNTED CIRCUIT BOARD, MEM-83
A-8312-629-A	o	MOUNTED CIRCUIT BOARD, MS-54
A-8276-625-A	o	MOUNTED CIRCUIT BOARD, PC-70
A-8276-619-A	o	MOUNTED CIRCUIT BOARD, PTC-71
A-8312-319-A	o	MOUNTED CIRCUIT BOARD, SE-358
A-8276-628-A	o	MOUNTED CIRCUIT BOARD, TR-79

7-3-1. Frame List

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8312-566-A	s	DRUM ASSY, DDH-55A
1pc	A-8312-567-A	s	UPPER DRUM ASSY, DDR-55-R
1pc	A-8312-151-A	s	BRUSH (SR4) ASSY (RP)
1pc ⚠	1-251-378-11	s	INLET (WITH NOISE FILTER)
1pc ⚠	1-468-201-11	s	REGULATOR, SWITCHING
1pc ⚠	1-533-630-11	s	BREAKER, CIRCUIT 5A
1pc ⚠	1-762-300-11	s	SWITCH, ROCKER
1pc	1-543-316-31	s	HEAD, SENSING "TAPE TOP SENSOR"
1pc	1-543-316-31	s	HEAD, SENSING "TAPE END SENSOR"
F1(SWITCHING REGULATOR)			
⚠	1-576-230-11	s	FUSE 3.15A 250V
F101(IF-682/683 board)			
⚠	1-532-779-11	s	FUSE 2A 125V
H001	8-825-778-22	s	HEAD, AUDIO EPS244-2103G
H002	8-825-770-74	s	HEAD, FE EF291-21
M001	1-698-779-11	s	FAN, DC
M002	1-698-152-11	s	MOTOR, DC (SVD-1449) "REEL SHIFT"
M003	1-698-152-11	s	MOTOR, DC (SVD-1449) "THREADING"
M004	1-698-152-11	s	MOTOR, DC (SVD-1449) "CASSETTE COMPARTMENT UP/DOWN"
M005	A-8267-774-C	s	RM ASSY "S-REEL"
M006	A-8267-774-C	s	RM ASSY "T-REEL"
M007	1-698-179-12	s	MOTOR, DC (CAPSTAN)
PM001	1-454-607-11	s	SOLENOID "CLEANING"
PM002	1-454-338-00	s	SOLENOID "PINCH"
PM003	1-454-417-41	s	SOLENOID "S-BRAKE"
PM004	1-454-417-41	s	SOLENOID "T-BRAKE"
to AC INLET			
1pc ⚠	1-957-069-12	o	HARNESS, SUB (AC GND)
1pc ⚠	1-957-070-12	o	HARNESS, SUB (AC BRAKER)
to AT HEAD			
CN910	1-957-057-11	o	HARNESS, SUB (AT)
to BRAKER			
1pc ⚠	1-957-070-12	o	HARNESS, SUB (AC BRAKER)
to CAPSTAN MOTOR			
CN001	1-951-926-11	o	HARNESS, SUB (CAP MOTOR)
to CCM-15 board for THREADING MOTOR			
CN920	1-956-194-12	o	HARNESS, SUB (TH MTR)
to CCM-15 board for REEL SHIFT MOTOR			
CN920	1-951-929-11	o	HARNESS, SUB (SFT MOTOR)

(Frame List)

Ref. No. or Q'ty	Part No.	SP	Description
to CL-29 board			
CN930	1-956-184-11	o	HARNESS, SUB (CASS)
CN933	1-751-644-11	s	WIRE, FLEXIBLE CARD 5P
CN935	1-569-195-11	s	HOUSING, 2P
2pcs	1-569-193-11	o	COANTACT, FEMALE, AWG24-30
to DEW SENSOR			
1pc	1-956-191-12	o	HARNESS, SUB (DEW)
to DR-327 board			
CN1	1-751-425-11	s	WIRE, FLEXIBLE CARD 36P
CN2	1-751-425-11	s	WIRE, FLEXIBLE CARD 36P
CN3	1-782-130-11	o	FLAT CABLE, 34P
CN4	1-580-587-11	o	HOUSING, LY 22P
6pcs	1-573-176-11	o	CONTACT, FEMALE AWG22-26
16pcs	1-580-599-11	o	CONTACT, LY, FEMALE
CN5	1-957-066-12	o	HARNESS, SUB (DR POWER)
to DRUM ASSY			
CN610	1-957-055-11	o	HARNESS, SUB (RF REC)
CN611	1-957-056-11	o	HARNESS, SUB (RF PB)
CN612	1-580-587-11	o	HOUSING, LY 22P
6pcs	1-573-176-11	o	CONTACT, FEMALE AWG22-26
16pcs	1-580-599-11	o	CONTACT, LY, FEMALE
to DSP-78 board			
CN101	1-957-060-11	o	HARNESS, SUB (MA DSP2)
CN102	1-957-059-11	o	HARNESS, SUB (MA DSP1)
to EQ-66 board			
CN202	1-957-055-11	o	HARNESS, SUB (RF REC)
CN203	1-957-055-11	o	HARNESS, SUB (RF REC)
CN204	1-957-055-11	o	HARNESS, SUB (RF REC)
CN205	1-957-056-11	o	HARNESS, SUB (RF PB)
CN206	1-957-056-11	o	HARNESS, SUB (RF PB)
CN208	1-957-057-11	o	HARNESS, SUB (AT)
CN209	1-957-057-11	o	HARNESS, SUB (AT)
CN211	1-957-057-11	o	HARNESS, SUB (AT)
CN210	1-957-058-11	o	HARNESS, SUB (FULL ERASE)
to EX-603 board			
CN251	1-957-053-11	o	HARNESS, SUB (EX MA1)
CN252	1-957-054-12	o	HARNESS, SUB (EX MA2)
CN253	1-957-067-12	o	HARNESS, SUB (EQ POWER)
CN254	1-698-779-11	o	FAN DC
to FULL ERASE HEAD			
CN911	1-957-058-11	o	HARNESS, SUB (FULL ERASE)

(Frame List)

Ref. No. or Q'ty	Part No.	SP	Description
to IF-682/683 board			
CN101	1-770-038-21	o	CONNECTOR, 68P, FEMALE
CN102	1-770-038-21	o	CONNECTOR, 68P, FEMALE
CN103	1-957-881-11	o	HARNESS (IFMA)
CN104	1-957-064-12	o	HARNESS, SUB (MA 9PIN)
to MA-83 board			
CN1	1-782-130-11	o	FLAT CABLE, 34P
CN6	1-957-065-12	o	HARNESS, SUB (MA POWER)
CN100	1-957-060-11	o	HARNESS, SUB (MA DSP2)
CN101	1-957-059-11	o	HARNESS, SUB (MA DSP1)
CN103	1-957-063-12	o	HARNESS, SUB (MA 232C)
CN108	1-957-881-11	o	HARNESS (IFMA)
CN251	1-957-053-11	o	HARNESS, SUB (EX MA1)
CN252	1-957-054-12	o	HARNESS, SUB (EX MA2)
to MS-54 board			
CN1	1-751-425-11	s	WIRE, FLEXIBLE CARD 36P
CN2	1-751-425-11	s	WIRE, FLEXIBLE CARD 36P
CN3	1-957-061-11	o	HARNESS, SUB (MS SE)
CN4	1-956-193-11	o	HARNESS, SUB (TOP)
CN5	1-956-184-11	o	HARNESS, SUB (CASS)
CN6	1-951-933-11	o	HARNESS, SUB (CAS SENS)
CN7	1-956-187-11	o	HARNESS, SUB (T TEN)
CN9	1-559-907-11	s	WIRE, FLEXIBLE CARD 13P
CN10	1-559-907-11	s	WIRE, FLEXIBLE CARD 13P
CN11	1-951-929-11	o	HARNESS, SUB (SFT MOTOR)
CN12	1-951-979-11	o	HARNESS, SUB (REEL POS)
CN13	1-951-926-11	o	HARNESS, SUB (CAP MOTOR)
CN14	1-956-194-11	o	HARNESS, SUB (TH MTR)
CN15	1-956-189-11	o	HARNESS, SUB (TH FG)
CN16	1-956-188-11	o	HARNESS, SUB (PINCH)
CN17	1-956-190-11	o	HARNESS, SUB (END)
CN18	1-951-925-11	o	HARNESS, SUB (S-TEN REG)
CN19	1-956-191-12	o	HARNESS, SUB (DEW)
to PC-70 board			
CN934	1-751-934-11	s	WIRE, FLEXIBLE CARD 5P
to PD-35 board			
CN854	1-956-188-11	o	HARNESS, SUB (PINCH)
to PTC-54 board			
CN904	1-956-189-11	o	HARNESS, SUB (TH FG)
to PTC-59 board			
CN1	1-951-933-11	o	HARNESS, SUB (CAS SENS)
to PTC-71 board			
CN1	1-951-979-11	o	HARNESS, SUB (REEL POS)

(Frame List)

Ref. No. or Q'ty	Part No.	SP	Description
to Power Supply			
CN1	⚠ 1-957-068-12	o	HARNESS, SUB (AC SW)
CN51	1-957-065-12	o	HARNESS, SUB (MA POWER)
CN52	1-957-066-12	o	HARNESS, SUB (DR POWER)
CN53	1-957-067-12	o	HARNESS, SUB (EQ POWER)
to RM-82 board			
CN923	1-559-907-11	s	WIRE, FLEXIBLE CARD 13P
CN926	1-562-149-11	o	HOUSING, 4P
4pcs	1-564-026-00	s	CONTACT, FEMALE, AWG26-30
CN927	1-562-148-11	o	HOUSING, 3P
3pcs	1-564-026-00	s	CONTACT, FEMALE, AWG26-30
to SE-358 board			
CN1	1-957-061-11	o	HARNESS, SUB (MS SE)
CN3	A-8312-151-A	s	BRUSH (SR4) ASSY (RP)
to TAPE END SENSOR			
CN001	1-956-190-11	o	HARNESS, SUB (END)
to TAPE TOP SENSOR			
CN001	1-956-193-11	o	HARNESS, SUB (TOP)
to TR-78 board			
CN1	1-951-925-11	o	HARNESS, SUB (S-TEN REG)
to TR-79 board			
CN1	1-956-187-11	o	HARNESS, SUB (T TEN)

7-4. Supplied Accessories List

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8007-311-A	s	FILTER ASSY

7-5. Optional Fixtures List

Part No.	SP	Description
A-8312-673-A	o	EXTENSION BOARD, EX-602
J-6035-070-A	o	EXTRACTION TOOL (for PLCC socket)
J-6080-029-A	o	SMALL DENTAL MIRROR (Round type)
J-6086-570-A	o	REFERENCE FLAT PLATE
J-6152-450-A	o	WIRE CLEARNCE CHECK GAUGE SET
J-6190-800-A	o	TENSION REGULATOR SLANTNESS CHECK TOOL
J-6251-090-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=2.5 mm, l=120 mm)
J-6323-440-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=0.89 mm, l=50 mm)
J-6323-500-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=2 mm, l=75 mm)
J-6323-420-A	o	TORQUE SCREWDRIVER'S BIT (+2 mm, l=75 mm)
J-6323-430-A	o	TORQUE SCREWDRIVER'S BIT (+3 mm, l=90 mm)
J-6323-510-A	o	TORQUE SCREWDRIVER (6 kg.cm)
J-6323-520-A	o	TORQUE SCREWDRIVER (12 kg.cm)
J-6320-870-A	o	REEL MOTOR SHAFT SLANTNESS CHECK FIXTURE
J-6320-880-A	o	CASSETTE REFERENCE PLATE (L)
J-6322-610-A	o	TAPE GUIDE ADJUSTMENT DRIVER
J-6329-350-A	o	REELTABLE HEIGHT GAUGE
3-184-527-01	o	CLEANING CLOTH (15 cm x 15 cm)
7-432-114-11	o	LOCKING COMPOUND, 1401B (200 g)
7-661-018-18	o	DIAMOND OIL, NT-68 (50 ml)
7-651-000-10	o	SONY GREASE, SGL-601 (50 g)
7-700-736-01	o	L-SHAPED HEXAGONAL WRENCH (d=1.27 mm)
7-700-736-03	o	L-SHAPED HEXAGONAL WRENCH (d=2 mm)
7-700-736-05	o	L-SHAPED HEXAGONAL WRENCH (d=1.5 mm)
7-700-766-04	o	L-SHAPED HEXAGONAL WRENCH (d=2.5 mm)
8-960-074-01	o	ALIGNMENT TAPE, YR5-1
8-960-074-11	o	ALIGNMENT TAPE, YR2-1
9-911-053-00	o	THICKNESS GAUGE
9-919-573-01	o	CLEANING LIQUID

Section 8
Block Diagrams & Frame Wiring

Circuit Description of GY-2120

- Refer to attached GY-2120 Block Diagram.

A BLOCK:

(1) Main System Controler

GY-2120's system control functions are performed through System Controller CPU (SH-2). This CPU has flash EEPROM whose firmware update is easily performed.

The System controller main functions are as follows.

- SCSI controller management
- Data compression management
- Buffer memory management
- Sub code generation
- File management/table management
- Communication with OPTION IF CPU and SYS CPU
- Self-diagnostics

(2) SCSI Controller

For SCSI control an FAS366 (Q-Logic) is used.

In GY-2120, phase switching and data transmission between buffer memory and SCSI bus, and interpreting SCSI commands are performed by the system controller's firmware.

During the Buffer memory's data writing, ECC is appended (being that there are 64 data bits and 8 parity bits). During buffer memory readout, ECC check is performed.

B BLOCK:

(1) Data compression control

(2) Buffer Memory/Memory Controler

Buffer memory I/O bus is 72 bits width, (data=:64 bits and parity:8 bits) Buffer memory is composed of 32 MB DRAM*

Logically this DRAM is divided into 8 banks of use.

In each tape track, user data is fixed by subcode from the controller (CPU) and written by buffer memory. Also, the system controller's firmware controls the 8 memory banks upper switching memory area, the ECC block and data transmission etc. 8 bit transmission of Buffer memory and ECC encoder/ECC decoder transmission performed.

* Standard Memory Size is 32 MB. Factory option Buffer Memory are 16 MB, 48 MB or 64 MB by the additional board.

C BLOCK:

(1) ECC Encoder

Buffer memory data is received at this block where double error correction code (Reed-Solomon code) is appended and is the main function of the signals performed below.

- APPEND C2 ERROR CORRECTION CODE 27 bytes of C2 error correction (parity) code is appended to 77 bytes of data.
- TAPE'S TRACK INTERLEAVING Product Array, C1 data group substitution is performed from the upper C2 data group. On the other hand, the tape's upper 4 track segment's data is interleaved with the C1 data group unit. Track interleaving and the correction code's correction ability are a summed process. When reading out from tape, 1 track segment of data error is output, but in C2's correction circuit data recovery is possible.
- APPEND SYNC BLOCK ID
- APPEND C1 ERROR CORRECTION CODE
  To 192 bytes of data, 12 bytes of error correction code are appended.
- RANDOMIZING
  Every bit's 1/0 average is spread by pseudo-random data numbers in order to improve the record function's integrity.

(2) Word Interleaving

In the 4 SYNC BLOCK, 1 byte unit segment of data are interleaved.

Word interleaving and C1 correction code's correction ability have a summed process. When reading out from tape, up to 20 bytes of consecutive errors is output, but in C1's correction circuit data recovery is possible.

Further, from the ECC encoder's buffer memory input, data is appended, parity check is performed, and transmission error is sensed between the buffer memory and the ECC encoder.

(3) ECC Decoder

Regarding the ECC decoder block, SYNC BLOCK segments are output in the channel coding decoder and perform the following processes.

- WORD REVERSE INTERLEAVE
- REVERSE RANDOMIZE
- C1 ERROR CORRECTION
- TRACK REVERSE INTERLEAVE
- C2 ERROR CORRECTION

In C1 error correction, 1 SYNC BLOCK has up to 5 bytes of error data, then in the C2 column (77 bytes), up to 26 bytes of error correction is possible.

Furthermore, continuity check etc. is performed in the decode (reverse interleaving and randomizing process) block (except error segments) for sense stabilization.

ECC decoder's buffer memory writes 8 bit data and 1 bit of parity is added.

This parity bit is from the SCSI controller's buffer memory's data reading check.

(4) Channel Coding Encoder

From this block's ECC encoder block, 8 bits of data are converted to 9 bits.

Also, the SYNC BLOCK's leading 4 bytes of signal is appended. 8 to 9 bit conversion to the tape's record signal is done so that long 0 or 1 bit strings become DC free. This improves the record function's integrity.

(5) Channel Coding Decoder

In this block's SYNC signal sensing, data limits are performed to the SYNC BLOCK segment. After that, 9 to 8 bit conversion (opposite of 8 to 9 bit conversion) is performed, and a single 8 bit unit is restored.

D BLOCK:

(1) TTP System Controller

The TTP System Controller CPU (SYS CPU) performs the following control functions.

- Communication with SCSI CPU and SERVO CPU
- Time code write/read control
- Tape write/read timing control
- Date read/write retry management
- Self-diagnostics

E BLOCK:

(1) READ/WRITE Amp Circuit

From the channel coding encoder's data, the serial signal is converted by partial response class 4 (PR(1,0,-1)) signal processing and becomes pre-code conditioned. This signal is further scanned and put inside the write amplifier and then written to the tape track for recall.

Further, from the read head, the output signal is decoded by a read amplifier/equalizer, Viterbi's decoder circuit for the channel coding decoder's input.

Under the servo block's control, the CTL signal and time code signal each have a dedicated write Amplifier/read amplifier. Write and read are performed on the tape's longitudinal track.

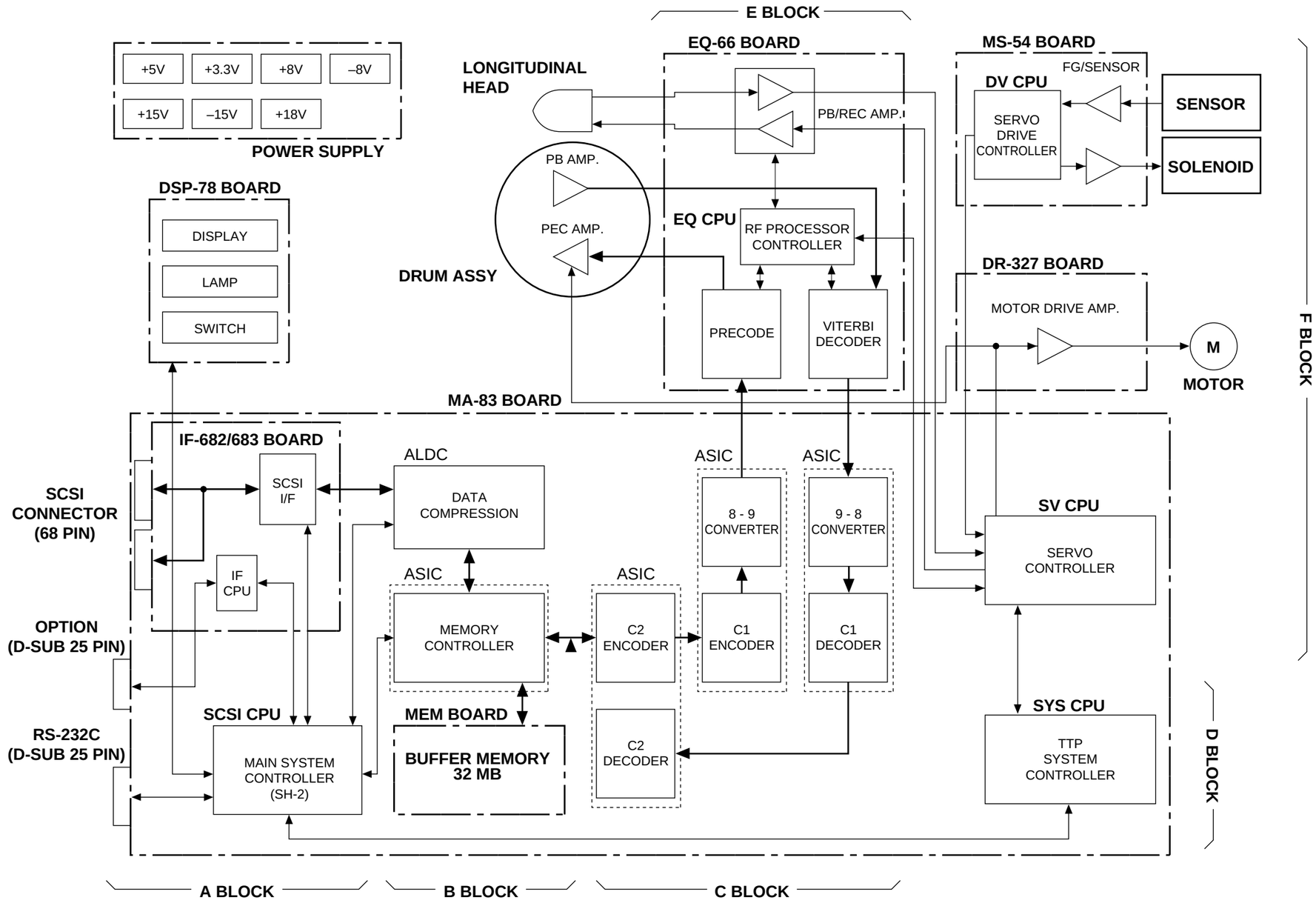
F BLOCK:

(1) Servo

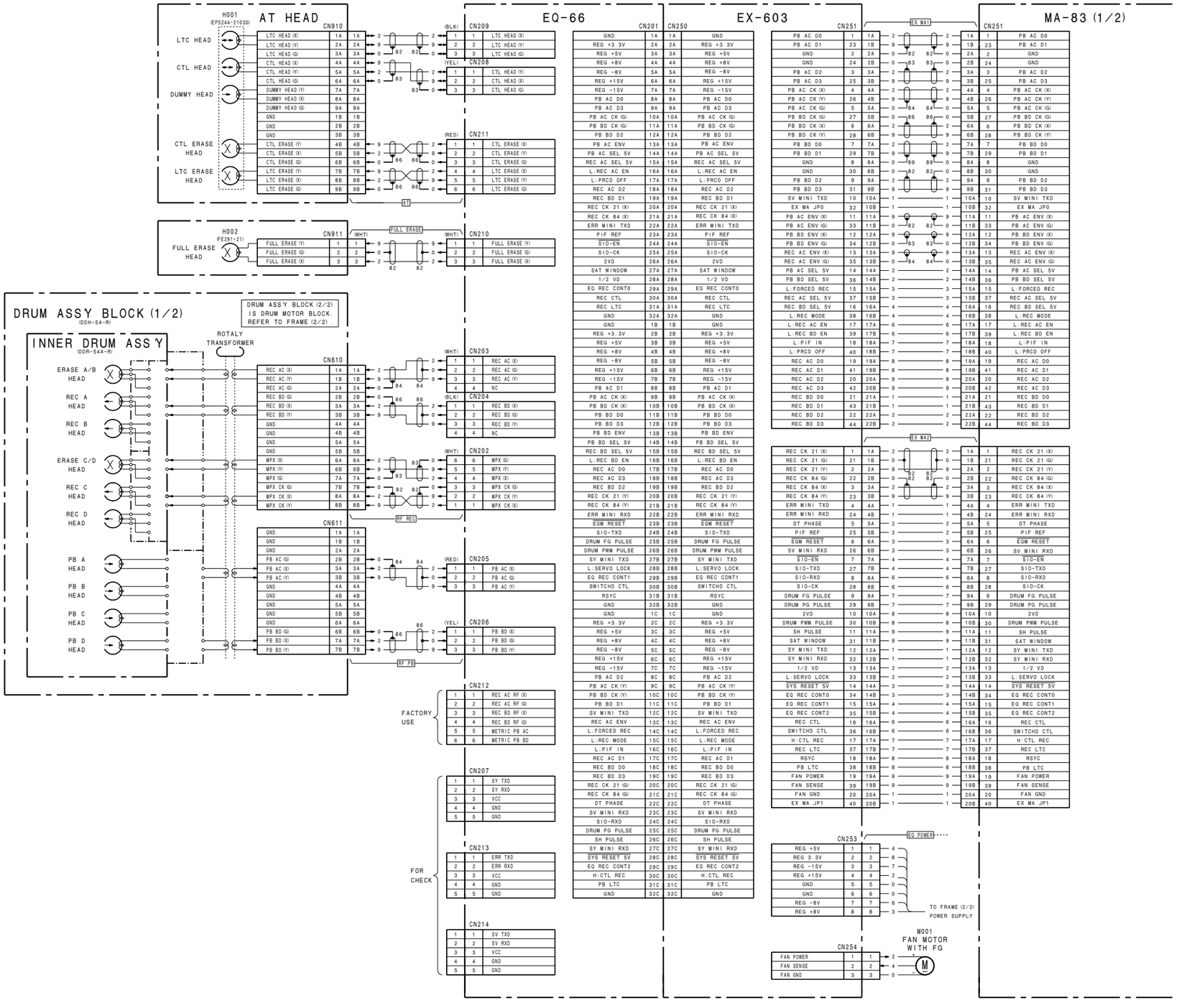
2 pieces of CPU are used. They are used for mechanical system control (software servo algorithm method etc.),

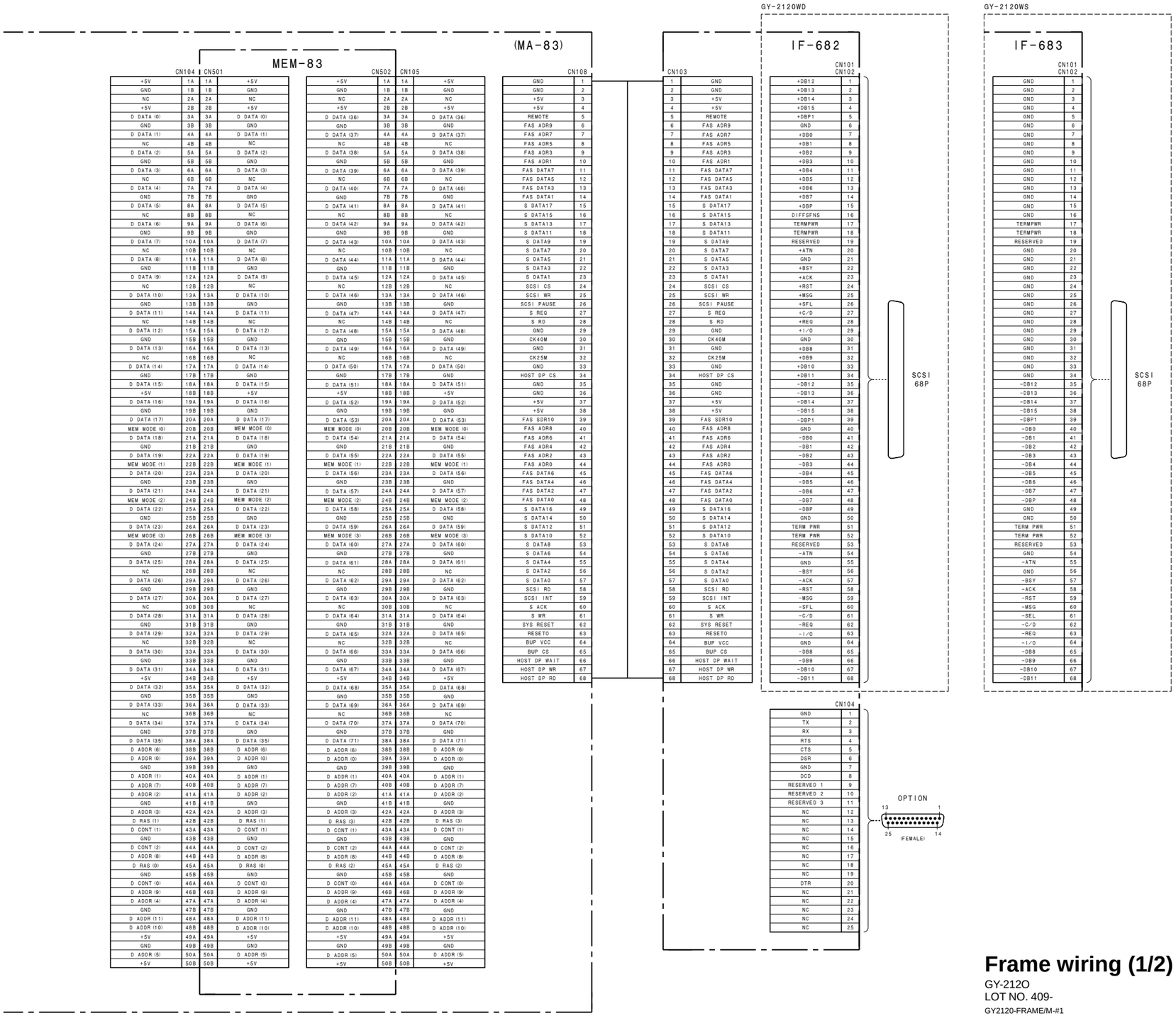
2 Pieces of CPU control the following mechanical system's control functions.

- Scanner rotation control
- Tape speed control
- CTL signal and SAT (Supplemental automatic tracking) signal's
- Use for automatic tracking control
- Cassette tape thread/unthread control
- Tape tension control
- PEOT (physical end of tape), PBOT (physical beginning of tape) sensors ETC. And the various position sensors between, and Interface circuit.
- Reel, capstan, drum; signal interface circuit



Overall
GY-2120
GY2120-OVERALLBLOCK/M


AT HEAD
H001
(EP5244-2103G)
LTC HEAD
CTL HEAD
DUMMY HEAD
CTL ERASE HEAD
LTC ERASE HEAD
CN910
LTC HEAD (X)
LTC HEAD (Y)
LTC HEAD (G)
CTL HEAD (X)
CTL HEAD (Y)
CTL HEAD (G)
DUMMY HEAD (Y)
DUMMY HEAD (X)
DUMMY HEAD (G)
CTL ERASE (Y)
CTL ERASE (X)
CTL ERASE (G)
LTC ERASE (Y)
LTC ERASE (X)
LTC ERASE (G)
H002
(FE291-21)
FULL ERASE HEAD
CN911
FULL ERASE (Y)
FULL ERASE (G)
FULL ERASE (X)
DRUM ASSY BLOCK (1/2)
(DDH-54-R)
DRUM ASSY BLOCK (2/2) IS DRUM MOTOR BLOCK. REFER TO FRAME (2/2).
INNER DRUM ASSY
(DDR-54A-R)
ROTALY TRANSFORMER
ERASE A/B HEAD
REC A HEAD
REC B HEAD
ERASE C/D HEAD
REC C HEAD
REC D HEAD
PB A HEAD
PB B HEAD
PB C HEAD
PB D HEAD
CN610
REC AC (X)
REC AC (Y)
REC AC (G)
REC BD (G)
REC BD (X)
REC BD (Y)
MPX (X)
MPX (Y)
MPX (G)
MPX CK (G)
MPX CK (X)
MPX CK (Y)
CN611
PB AC (G)
PB AC (X)
PB AC (Y)
PB BD (G)
PB BD (X)
PB BD (Y)
CN209
CN208
CN211
CN210
CN203
CN204
CN202
CN205
CN206
CN212
CN207
CN213
CN214
FACTORY USE
FOR CHECK
RF REC
RF PB
EQ-66
CN201
CN250
EX-603
CN251
EX MA1
EX MA2
MA-83 (1/2)
CN253
EQ POWER
TO FRAME (2/2) POWER SUPPLY
CN254
M001
FAN MOTOR WITH FG



CN104		CN501	
+5V	1A	1A	+5V
GND	1B	1B	GND
NC	2A	2A	NC
+5V	2B	2B	+5V
D DATA (0)	3A	3A	D DATA (0)
GND	3B	3B	GND
D DATA (1)	4A	4A	D DATA (1)
NC	4B	4B	NC
D DATA (2)	5A	5A	D DATA (2)
GND	5B	5B	GND
D DATA (3)	6A	6A	D DATA (3)
NC	6B	6B	NC
D DATA (4)	7A	7A	D DATA (4)
GND	7B	7B	GND
D DATA (5)	8A	8A	D DATA (5)
NC	8B	8B	NC
D DATA (6)	9A	9A	D DATA (6)
GND	9B	9B	GND
D DATA (7)	10A	10A	D DATA (7)
NC	10B	10B	NC
D DATA (8)	11A	11A	D DATA (8)
GND	11B	11B	GND
D DATA (9)	12A	12A	D DATA (9)
NC	12B	12B	NC
D DATA (10)	13A	13A	D DATA (10)
GND	13B	13B	GND
D DATA (11)	14A	14A	D DATA (11)
NC	14B	14B	NC
D DATA (12)	15A	15A	D DATA (12)
GND	15B	15B	GND
D DATA (13)	16A	16A	D DATA (13)
NC	16B	16B	NC
D DATA (14)	17A	17A	D DATA (14)
GND	17B	17B	GND
D DATA (15)	18A	18A	D DATA (15)
+5V	18B	18B	+5V
D DATA (16)	19A	19A	D DATA (16)
GND	19B	19B	GND
D DATA (17)	20A	20A	D DATA (17)
MEM MODE (0)	20B	20B	MEM MODE (0)
D DATA (18)	21A	21A	D DATA (18)
GND	21B	21B	GND
D DATA (19)	22A	22A	D DATA (19)
MEM MODE (1)	22B	22B	MEM MODE (1)
D DATA (20)	23A	23A	D DATA (20)
GND	23B	23B	GND
D DATA (21)	24A	24A	D DATA (21)
MEM MODE (2)	24B	24B	MEM MODE (2)
D DATA (22)	25A	25A	D DATA (22)
GND	25B	25B	GND
D DATA (23)	26A	26A	D DATA (23)
MEM MODE (3)	26B	26B	MEM MODE (3)
D DATA (24)	27A	27A	D DATA (24)
GND	27B	27B	GND
D DATA (25)	28A	28A	D DATA (25)
NC	28B	28B	NC
D DATA (26)	29A	29A	D DATA (26)
GND	29B	29B	GND
D DATA (27)	30A	30A	D DATA (27)
NC	30B	30B	NC
D DATA (28)	31A	31A	D DATA (28)
GND	31B	31B	GND
D DATA (29)	32A	32A	D DATA (29)
NC	32B	32B	NC
D DATA (30)	33A	33A	D DATA (30)
GND	33B	33B	GND
D DATA (31)	34A	34A	D DATA (31)
+5V	34B	34B	+5V
D DATA (32)	35A	35A	D DATA (32)
GND	35B	35B	GND
D DATA (33)	36A	36A	D DATA (33)
NC	36B	36B	NC
D DATA (34)	37A	37A	D DATA (34)
GND	37B	37B	GND
D DATA (35)	38A	38A	D DATA (35)
D ADDR (6)	38B	38B	D ADDR (6)
D ADDR (0)	39A	39A	D ADDR (0)
GND	39B	39B	GND
D ADDR (1)	40A	40A	D ADDR (1)
D ADDR (7)	40B	40B	D ADDR (7)
D ADDR (2)	41A	41A	D ADDR (2)
GND	41B	41B	GND
D ADDR (3)	42A	42A	D ADDR (3)
D RAS (1)	42B	42B	D RAS (1)
D CONT (1)	43A	43A	D CONT (1)
GND	43B	43B	GND
D CONT (2)	44A	44A	D CONT (2)
D ADDR (8)	44B	44B	D ADDR (8)
D RAS (0)	45A	45A	D RAS (0)
GND	45B	45B	GND
D CONT (0)	46A	46A	D CONT (0)
D ADDR (9)	46B	46B	D ADDR (9)
D ADDR (4)	47A	47A	D ADDR (4)
GND	47B	47B	GND
D ADDR (11)	48A	48A	D ADDR (11)
D ADDR (10)	48B	48B	D ADDR (10)
+5V	49A	49A	+5V
GND	49B	49B	GND
D ADDR (5)	50A	50A	D ADDR (5)
+5V	50B	50B	+5V

CN502		CN105	
+5V	1A	1A	+5V
GND	1B	1B	GND
NC	2A	2A	NC
+5V	2B	2B	+5V
D DATA (36)	3A	3A	D DATA (36)
GND	3B	3B	GND
D DATA (37)	4A	4A	D DATA (37)
NC	4B	4B	NC
D DATA (38)	5A	5A	D DATA (38)
GND	5B	5B	GND
D DATA (39)	6A	6A	D DATA (39)
NC	6B	6B	NC
D DATA (40)	7A	7A	D DATA (40)
GND	7B	7B	GND
D DATA (41)	8A	8A	D DATA (41)
NC	8B	8B	NC
D DATA (42)	9A	9A	D DATA (42)
GND	9B	9B	GND
D DATA (43)	10A	10A	D DATA (43)
NC	10B	10B	NC
D DATA (44)	11A	11A	D DATA (44)
GND	11B	11B	GND
D DATA (45)	12A	12A	D DATA (45)
NC	12B	12B	NC
D DATA (46)	13A	13A	D DATA (46)
GND	13B	13B	GND
D DATA (47)	14A	14A	D DATA (47)
NC	14B	14B	NC
D DATA (48)	15A	15A	D DATA (48)
GND	15B	15B	GND
D DATA (49)	16A	16A	D DATA (49)
NC	16B	16B	NC
D DATA (50)	17A	17A	D DATA (50)
GND	17B	17B	GND
D DATA (51)	18A	18A	D DATA (51)
+5V	18B	18B	+5V
D DATA (52)	19A	19A	D DATA (52)
GND	19B	19B	GND
D DATA (53)	20A	20A	D DATA (53)
MEM MODE (0)	20B	20B	MEM MODE (0)
D DATA (54)	21A	21A	D DATA (54)
GND	21B	21B	GND
D DATA (55)	22A	22A	D DATA (55)
MEM MODE (1)	22B	22B	MEM MODE (1)
D DATA (56)	23A	23A	D DATA (56)
GND	23B	23B	GND
D DATA (57)	24A	24A	D DATA (57)
MEM MODE (2)	24B	24B	MEM MODE (2)
D DATA (58)	25A	25A	D DATA (58)
GND	25B	25B	GND
D DATA (59)	26A	26A	D DATA (59)
MEM MODE (3)	26B	26B	MEM MODE (3)
D DATA (60)	27A	27A	D DATA (60)
GND	27B	27B	GND
D DATA (61)	28A	28A	D DATA (61)
NC	28B	28B	NC
D DATA (62)	29A	29A	D DATA (62)
GND	29B	29B	GND
D DATA (63)	30A	30A	D DATA (63)
NC	30B	30B	NC
D DATA (64)	31A	31A	D DATA (64)
GND	31B	31B	GND
D DATA (65)	32A	32A	D DATA (65)
NC	32B	32B	NC
D DATA (66)	33A	33A	D DATA (66)
GND	33B	33B	GND
D DATA (67)	34A	34A	D DATA (67)
+5V	34B	34B	+5V
D DATA (68)	35A	35A	D DATA (68)
GND	35B	35B	GND
D DATA (69)	36A	36A	D DATA (69)
NC	36B	36B	NC
D DATA (70)	37A	37A	D DATA (70)
GND	37B	37B	GND
D DATA (71)	38A	38A	D DATA (71)
D ADDR (6)	38B	38B	D ADDR (6)
D ADDR (0)	39A	39A	D ADDR (0)
GND	39B	39B	GND
D ADDR (1)	40A	40A	D ADDR (1)
D ADDR (7)	40B	40B	D ADDR (7)
D ADDR (2)	41A	41A	D ADDR (2)
GND	41B	41B	GND
D ADDR (3)	42A	42A	D ADDR (3)
D RAS (3)	42B	42B	D RAS (3)
D CONT (1)	43A	43A	D CONT (1)
GND	43B	43B	GND
D CONT (2)	44A	44A	D CONT (2)
D ADDR (8)	44B	44B	D ADDR (8)
D RAS (2)	45A	45A	D RAS (2)
GND	45B	45B	GND
D CONT (0)	46A	46A	D CONT (0)
D ADDR (9)	46B	46B	D ADDR (9)
D ADDR (4)	47A	47A	D ADDR (4)
GND	47B	47B	GND
D ADDR (11)	48A	48A	D ADDR (11)
D ADDR (10)	48B	48B	D ADDR (10)
+5V	49A	49A	+5V
GND	49B	49B	GND
D ADDR (5)	50A	50A	D ADDR (5)
+5V	50B	50B	+5V

CN108	
GND	1
GND	2
+5V	3
+5V	4
REMOTE	5
FAS ADR9	6
FAS ADR7	7
FAS ADR5	8
FAS ADR3	9
FAS ADR1	10
FAS DATA7	11
FAS DATA5	12
FAS DATA3	13
FAS DATA1	14
S DATA17	15
S DATA15	16
S DATA13	17
S DATA11	18
S DATA9	19
S DATA7	20
S DATA5	21
S DATA3	22
S DATA1	23
SCSI CS	24
SCSI WR	25
SCSI PAUSE	26
S REQ	27
S RD	28
GND	29
CK40M	30
GND	31
CK25M	32
GND	33
HOST DP CS	34
GND	35
GND	36
+5V	37
+5V	38
FAS SDR10	39
FAS ADR8	40
FAS ADR6	41
FAS ADR4	42
FAS ADR2	43
FAS ADR0	44
FAS DATA6	45
FAS DATA4	46
FAS DATA2	47
FAS DATA0	48
S DATA16	49
S DATA14	50
S DATA12	51
S DATA10	52
S DATA8	53
S DATA6	54
S DATA4	55
S DATA2	56
S DATA0	57
SCSI RD	58
SCSI INT	59
S ACK	60
S WR	61
SYS RESET	62
RESETO	63
BUP VCC	64
BUP CS	65
HOST DP WAIT	66
HOST DP WR	67
HOST DP RD	68

CN103	
1	GND
2	GND
3	+5V
4	+5V
5	REMOTE
6	FAS ADR9
7	FAS ADR7
8	FAS ADR5
9	FAS ADR3
10	FAS ADR1
11	FAS DATA7
12	FAS DATA5
13	FAS DATA3
14	FAS DATA1
15	S DATA17
16	S DATA15
17	S DATA13
18	S DATA11
19	S DATA9
20	S DATA7
21	S DATA5
22	S DATA3
23	S DATA1
24	SCSI CS
25	SCSI WR
26	SCSI PAUSE
27	S REQ
28	S RD
29	GND
30	CK40M
31	GND
32	CK25M
33	GND
34	HOST DP CS
35	GND
36	GND
37	+5V
38	+5V
39	FAS SDR10
40	FAS ADR8
41	FAS ADR6
42	FAS ADR4
43	FAS ADR2
44	FAS ADR0
45	FAS DATA6
46	FAS DATA4
47	FAS DATA2
48	FAS DATA0
49	S DATA16
50	S DATA14
51	S DATA12
52	S DATA10
53	S DATA8
54	S DATA6
55	S DATA4
56	S DATA2
57	S DATA0
58	SCSI RD
59	SCSI INT
60	S ACK
61	S WR
62	SYS RESET
63	RESETO
64	BUP VCC
65	BUP CS
66	HOST DP WAIT
67	HOST DP WR
68	HOST DP RD

CN101 CN102	
+DB12	1
+DB13	2
+DB14	3
+DB15	4
+DBP1	5
GND	6
+DB0	7
+DB1	8
+DB2	9
+DB3	10
+DB4	11
+DB5	12
+DB6	13
+DB7	14
+DBP	15
DIFFSENS	16
TERMPWR	17
TERMPWR	18
RESERVED	19
+ATN	20
GND	21
+BSY	22
+ACK	23
+RST	24
+MSG	25
+SFL	26
+C/D	27
+REQ	28
+I/O	29
GND	30
+DB8	31
+DB9	32
+DB10	33
+DB11	34
-DB12	35
-DB13	36
-DB14	37
-DB15	38
-DBP1	39
GND	40
-DB0	41
-DB1	42
-DB2	43
-DB3	44
-DB4	45
-DB5	46
-DB6	47
-DB7	48
-DBP	49
GND	50
TERM PWR	51
TERM PWR	52
RESERVED	53
-ATN	54
GND	55
-BSY	56
-ACK	57
-RST	58
-MSG	59
-SFL	60
-C/D	61
-REQ	62
-I/O	63
GND	64
-DB8	65
-DB9	66
-DB10	67
-DB11	68

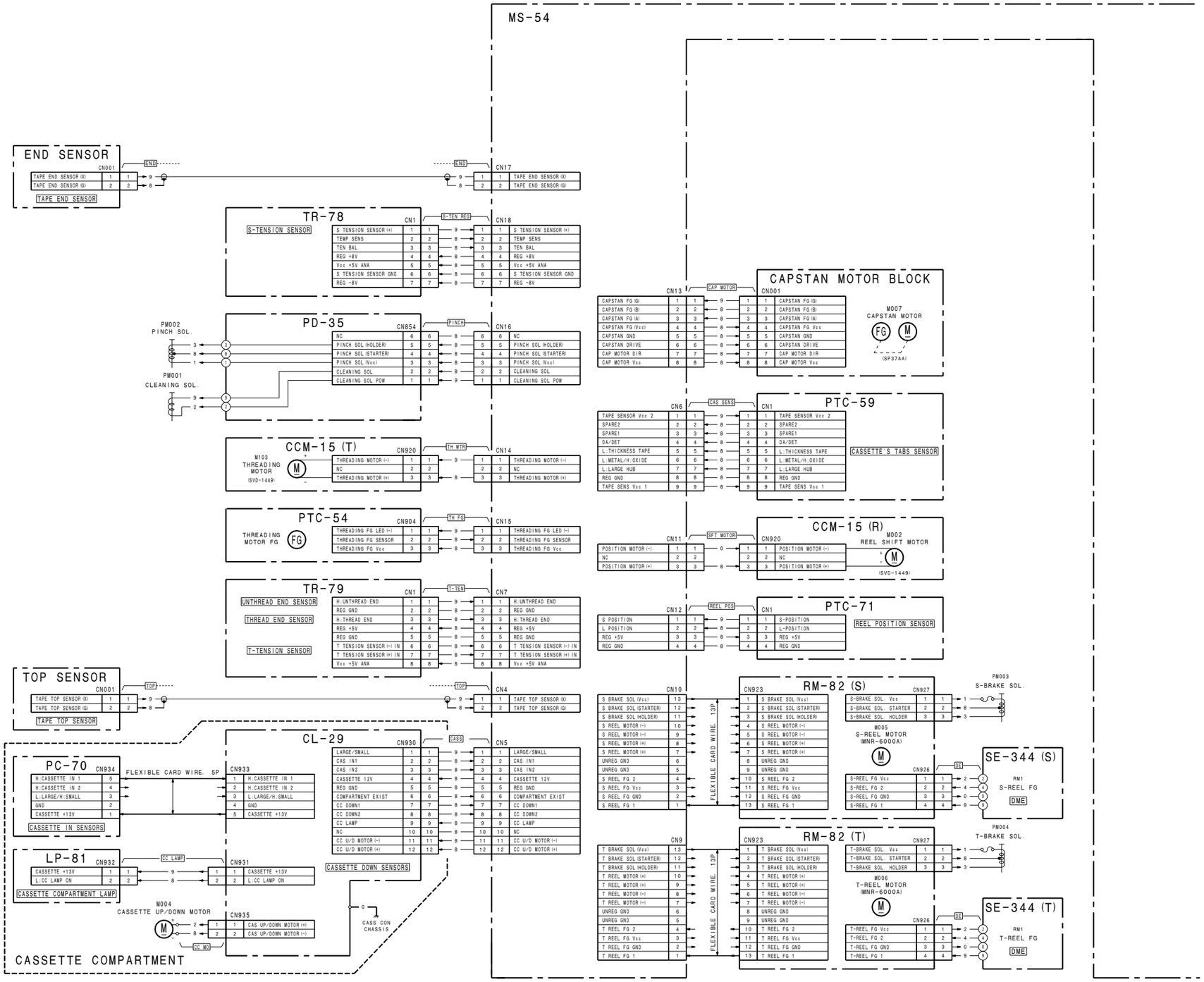
CN101 CN102	
GND	1
GND	2
GND	3
GND	4
GND	5
GND	6
GND	7
GND	8
GND	9
GND	10
GND	11
GND	12
GND	13
GND	14
GND	15
GND	16
TERMPWR	17
TERMPWR	18
RESERVED	19
GND	20
GND	21
GND	22
GND	23
GND	24
GND	25
GND	26
GND	27
GND	28
GND	29
GND	30
GND	31
GND	32
GND	33
GND	34
-DB12	35
-DB13	36
-DB14	37
-DB15	38
-DBP1	39
-DB0	40
-DB1	41
-DB2	42
-DB3	43
-DB4	44
-DB5	45
-DB6	46
-DB7	47
-DBP	48
GND	49
GND	50
TERM PWR	51
TERM PWR	52
RESERVED	53
GND	54
-ATN	55
GND	56
-BSY	57
-ACK	58
-RST	59
-MSG	60
-SEL	61
-C/D	62
-REQ	63
-I/O	64
-DB8	65
-DB9	66
-DB10	67
-DB11	68

CN104	
GND	1
TX	2
RX	3
RTS	4
CTS	5
DSR	6
GND	7
DCD	8
RESERVED 1	9
RESERVED 2	10
RESERVED 3	11
NC	12
NC	13
NC	14
NC	15
NC	16
NC	17
NC	18
NC	19
DTR	20
NC	21
NC	22
NC	23
NC	24
NC	25

Frame wiring (1/2)

GY-212O
LOT NO. 409-
GY2120-FRAME/M-#1

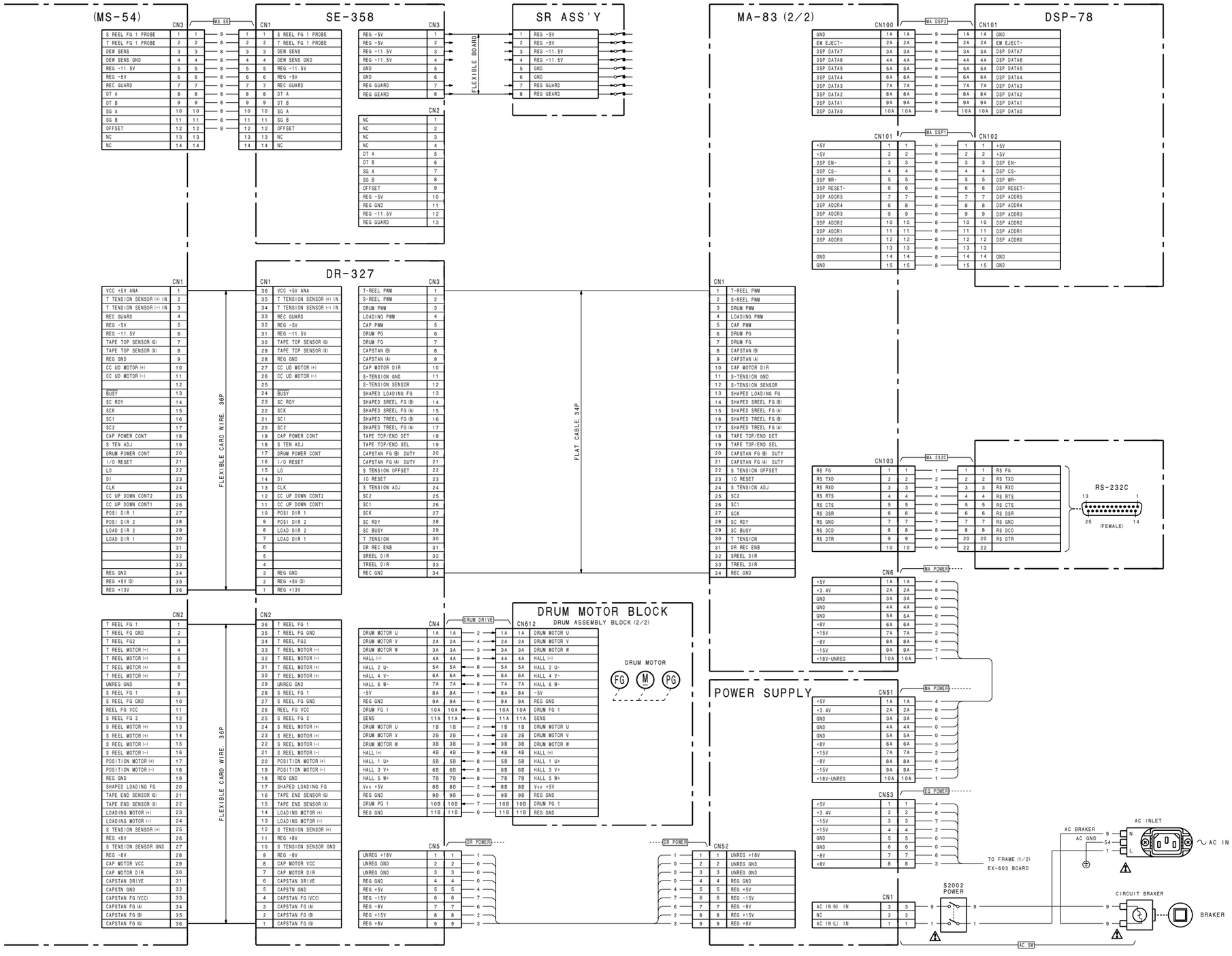
Frame Wiring (2/2)



8-6

http://getMANUAL.com

Frame Wiring (2/2)



Frame wiring (2/2)

GY-2120
LOT NO. 409-
GY2120-FRAME/M-#2

Appendix A
Downloading of Firmware

A-1. Downloading of firmware using DTF tape

(Compatible revision:After GY-2120 firmware revision GY1.20 or after)

A-1-1. Outline

GY-2120 can download the firmware from the special download tape inserted in the drive.
Start this mode from the self-diagnosis menu (Refer to Section 6-3-7. “Troubleshooting”.) from the front panel or the FDL menu (Refer to Section 6-2-3. “Download Mode”.) of RS-232C.
The special download tape contains those CPU firmwares in GY-2120 (Four:SCSI CPU, SYS CPU, SV CPU, IF CPU) requiring update. GY-2120 automatically determines this from the contents of the tape, and downloads for each CPU.

A-1-2. Operating from the Front Panel

1. Starting DIAG

Continue pressing the DIAG hole of the front panel.
When DIAG starts, the COMP indicator blinks.

2. Selecting the menu

Press the UNLOAD button on the front panel, and select Menu No. 099.

Note

To cancel download, press the DIAG hole to end the DIAG mode and return to the normal state.

<LCD display>

(When selecting menu)

DIAG: 099

3. Executing download

Press the RECOVER hole on the front panel.
INSERT Dnld Tape is displayed on the LCD.

Note

To cancel download, press the DIAG hole before inserting the tape and then abort.

<LCD display>

(When starting execution)

Insert Dnld Tape

(When aborting)

DIAG: 099 *9999

(‘*’ is blinking)

4. Inserting the special download tape

Insert the special download tape written with the desired firmware. GY-2120 automatically starts reading the tape.
Dnld Read is displayed on the LCD.
After reading, “Dnld Read OK” is displayed on the LCD.

<LCD display>

Dnld Read	When reading
↓	
Dnld Read OK	After reading

Notes

- When inserting the special download tape, check that the rec-proof tab of the cassette is indented (this means that the cassette is rec-prohibited).
- If the tape inserted is not the special download tape, it will automatically be ejected, and the error code “DIAG:099 *0990” (not download tape) will appear on the LCD.
- If an error occurs while reading the download tape, “Dnld Read NG” is displayed on the LCD, the tape is then automatically ejected, and the error code “DIAG:099 *0991” (error occurred while reading download tape) or “DIAG:099 *0992 (error in contents of download tape) appear on the LCD.
- The download process cannot be aborted while reading the tape.
  To abort, after reading the tape, press the DIAG hole. This displays “Dnld Cancel” on the LCD, the tape is then automatically ejected, and “DIAG:099 *9999” is displayed on the LCD.

<LCD display>

(When an error occurs)

Dnld Read NG
↓ Tape is automatically ejected
DIAG: 099 *0991

(When aborting)

Dnld Cancel
↓ Tape is automatically ejected
DIAG: 099 *9999

5. Checking the version of the downloaded firmware

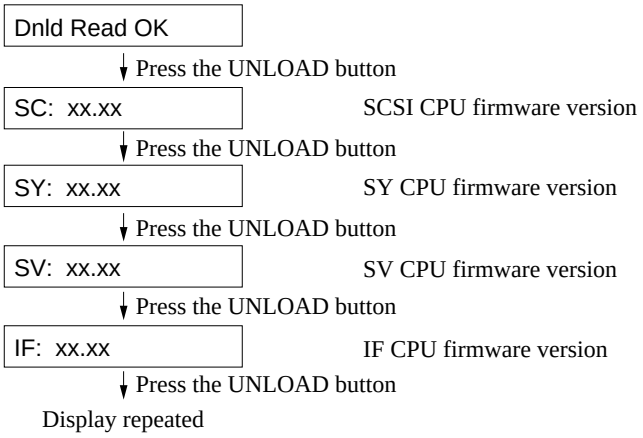
After completing reading, the version of the firmware downloaded to the CPUs can be checked. Each time the UNLOAD button is pressed on the front panel, the CPU firmware version will appear as shown below.

Note

The order and number of CPUs displayed differ according to the contents of the download tape.

<LCD display>

(When checking the version)



6. Writing in flash memory

After checking the version, press the RECOVER button on the front panel to start writing in the flash memory. First “Now
Downloading” is displayed on the LCD, followed by “Download xx CPU” (xx indicates the CPU type). When all writing completes, the tape is automatically ejected, and GY-2120 returns to the normal operation mode.

Notes

- When writing is started by pressing the RECOVER button, never turn off the power until the tape is ejected.
- GY-2120 automatically reboots up to twice until the tape is ejected and the process is completed. Take note that even if rebooted, it does not mean that the process has ended until the tape is ejected.
- It takes up to 8 minutes for the tape to be ejected and all processes to be completed after pressing the RECOVER button.
- If not writing in the flash memory, press the DIAG hole. After “Dnld Cancel” is displayed on the LCD, the tape will be ejected automatically and “DIAG: 099 *9999” is displayed on the LCD.
- If the RECOVER hole is pressed accidentally, continue pressing the UNLOAD button while “Now Downloading” is displayed on the LCD.
  GY-2120 automatically reboots, and returns to the normal mode.
  However as the tape will not be automatically ejected in this case, press the EJECT hole and eject the tape.
- If the EJECT hole is accidentally pressed in the attempt to write in the flash memory, press the ejected tape again and then press the RECOVER hole.

<LCD display>

(When writing in the flash memory)

Now Downloading	Writing starts
↓	
DownLoad IF CPU	Writing IF CPU firmware
↓	
DownLoad SV CPU	Writing SV CPU firmware
↓ Automatic reboot	
DOWNLOAD MODE	
↓	
DownLoad SY CPU	Writing SYS CPU firmware
↓	
DownLoad SC CPU	Writing SCSI CPU firmware
↓ Automatic reboot	
DOWNLOAD MODE	
↓ Automatic tape ejection	
No Tape 0H	End of downloading

A-1-3. Starting from RS-232C FDL Menu

1. Entering menu No. 99 at the FDL menu

Insert Download Tape is displayed on the RS-232C terminal.
Insert Dnld Tape is also displayed on the LCD.

2. Inserting the download tape

Insert the download tape. When inserted, GY-2120 automatically starts reading the tape.
Dnld Read is displayed on the LCD.
After reading, the LCD changes to “Dnld Read OK”.

Notes

- When inserting the special download tape, check that the rec-proof tab of the cassette is indented (this means that the cassette is rec-prohibited).
- If the tape inserted is not the special download tape, it will automatically be ejected.
- If an error occurs while reading the download tape, “Dnld Read NG” is displayed on the LCD, the tape is then automatically ejected.

3. Displaying the downloaded firmware version

When tape reading completes, each CPU firmware version will be displayed on the RS-232C terminal as shown in the following example.

<RS-232C Screen Display Example>

Download Tape [SY: xx.xx]
Download Tape [SV: xx.xx]
Download Tape [IF: xx.xx]
Download Tape [SC: xx.xx]

4. Writing in the flash memory

Following the firmware version, the following will be displayed.

Download from tape (about [Q] yes [Y]) =>

Entering “y” or “Y” here starts writing in the flash memory.
The LCD displays “Now Downloading” first, followed by “Download xx CPU” (xx indicates the CPU type).
When all writing completes, the tape will automatically be ejected, and GY-2120 returns to the normal operation mode.
To abort downloading, enter “q” or “Q”.
This will automatically eject the tape and return to the prompt of the FDL menu.

Notes

- When writing is started by entering “y” or “Y”, never turn off the power until the tape is ejected.
- GY-2120 automatically reboots up to twice until the tape is ejected and the process is completed. Take note that even if rebooted, it does not mean that the process has ended until the tape is ejected.
- It takes up to 8 minutes for the tape to be ejected and all processes to be completed after starting writing.
- If “y” or “Y” is entered accidentally, continue pressing the UNLOAD button while “Now Downloading” is displayed on the LCD. GY-2120 automatically reboots, and returns to the normal mode. However as the tape will not be automatically ejected in this case, press the EJECT hole and eject the tape.

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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

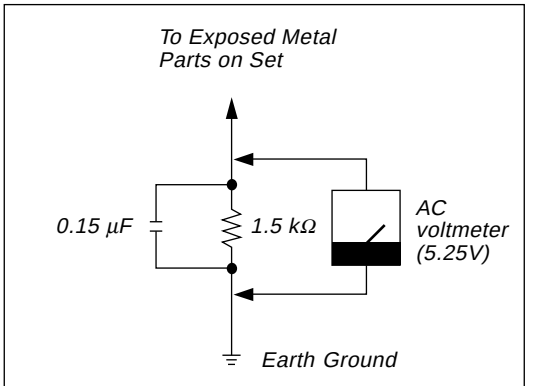

Fig A. Using an AC voltmeter to check AC leakage.

GY-2120WD (SY)
GY-2120WS (SY) E
9-967-718-03

Sony Corporation
Broadcasting & Professional Systems Company

Printed in Japan
1999. 2 08
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